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Twenty Thousand Tons of Rubber.

THE latest figures available at the date at which this journal goes to press indicate an importation of crude rubber into the United States for twelve months ending July 1 approximating 40,000,000 pounds—a figure far in excess of the movement in any former year. Yet there is no apparent plethora of rubber in stock in dealers' hands and no abnormal supply of manufactured goods in the market. Evidently the manufacturers have had the largest output in their experience, though not larger than was warranted by the demands of a country growing rapidly in population, in purchasing power and in capacity for making rubber goods minister to their comfort and convenience. There is nothing in the situation here, therefore, to suggest that another year's consumption of crude rubber may not be even greater, just as the figures for 1892 are larger than for 1891, and for the former year larger than in the past. Nor is it probable, with such a steady demand, at prices which must yield a profit to the rubber-gathering interests, that the production of crude gum will not continue on the same increasing scale that has marked the operations of several years past.

The following table, from the records of the United States Treasury Department, shows the importations of crude rubber, in pounds, for each of the eleven months ending June 1 last, compared with the corresponding period of the preceding year. It will be seen that in seven of these months the receipts were larger than in the same month of the year before:

	1890.	1891.
July.....	1,915,034	1,422,537—
August.....	1,744,965	1,504,031—
September.....	3,061,376	3,356,528+
October.....	2,493,904	4,936,036+
November.....	3,345,843	3,139,372—
December.....	2,913,382	4,647,844+
	1891.	1892.
January.....	3,555,233	3,037,739—
February.....	4,010,833	4,188,380+
March.....	4,522,442	4,565,223+
April.....	3,251,546	3,871,439+
May.....	2,246,041	2,584,439+
Total eleven months.....	33,060,599	37,252,958

[+Showing increase and —decrease.]

For the eleven months under review the declared value of crude-rubber imports was \$17,614,059, or an average of 47½ cents per pound for all grades. For the eleven months ending June 1, 1891, the value was reported at \$16,938,169, or an average of 52½ cents per pound. Crude rubber, therefore, cost our importers at wholesale this year about 4½ cents per pound less than last year.

The steady growth in the aggregate of rubber imports may be seen from the following table, in which the values are officially reported:

Eleven months ending June 1, 1887.....	\$12,634,358
Eleven months ending June 1, 1888.....	14,861,205
Eleven months ending June 1, 1889.....	11,683,717
Eleven months ending June 1, 1890.....	13,882,628
Eleven months ending June 1, 1891.....	17,070,655
Eleven months ending June 1, 1892.....	17,714,604

The figures in the latter table include Gutta-percha im-

ports, while the first table refers to India-rubber alone. The extent to which Gutta-percha figures, however, is very slight. The official statement would indicate a decline in this regard, though it may be noted that the figures for 1891 were much larger than the average. This showing is made for Gutta-percha for comparative periods of eleven months:

	Pounds.	Value.
Ending June 1, 1891	912,470	\$263,288
Ending June 1, 1892	138,486	100,545

The showing of exports of domestic manufactures of India-rubber are no less interesting. The figures for comparative periods of eleven months follow:

	Ending June 1, 1891.	Ending June 1, 1892.
Boots and shoes, pairs.....	168,176	220,375
Value of same.....	\$ 134,452	\$ 174,257
Value of all other.....	1,032,205	1,146,242
Total value.....	1,166,635	1,320,499

On the whole it is difficult to find in this statistical record any reason for other than favorable predictions in relation to the rubber industry.

New York Rubber-Men at the Fair.

WHEREVER one turns in the business and industrial world will be found illustrations of the wonderful variety of valuable uses to which India-rubber may be put. It is not likely that the World's Columbian Exposition at Chicago next year will prove an exception in this regard. While no arrangement has been made for a separate comprehensive exhibit by the rubber interests, there will be few departments without some sort of representation of this industry which is now so indispensable to the world's progress and convenience. The plans which have been matured for a State building for New York give promise that the structure will do ample credit to the Empire State and to the American Metropolis. Among those who have applied already for space in the unique and attractive building which is being designed are the following India-rubber firms whose headquarters are in New York city: New York Belting and Packing Co.; New York Rubber Co.; Goodyear India-Rubber Glove Co.; India-Rubber Comb Co. and the I. B. Kleinert Rubber Co.

Rubber-Tree Planting in Africa.

THE German East African Co. at their annual meeting at Berlin on June 21 declared a dividend for 1891 of 5 per cent., being the first money earned by the company. The development of the resources of the new German possessions in Africa is proceeding in numerous directions, the company named having under its management plantations of several important tropical products, the building of railroads and the opening up of steamboat navigation between the African harbors of Tanga and Dar es Salaam on one hand, and Bombay on the other. Already one steamer is making trips on that route. The planting experiments seem to have been successful to a certain extent; namely in Kikogwe at the mouth of the Pangani, with

cotton, and in Derema with coffee, cocoa and tea. Derema has also been selected as a trial station for other products, caoutchouc, cinnamon, cocoa, poppy, etc. The land of Usambara has been thoroughly explored by Hermann Rowehl, who has been for many years engaged in coffee-planting in West Mexico. It is hoped that coffee and India-rubber plants can be successfully cultivated in this territory. In the neighborhood of Tanga are the plantations of Walter von S. Paul-Iliaire, where the cultivation of vanilla and caoutchouc has been carried on with some success. The rubber plants with which experiments have been made are the *Hevea Brasiliensis* and *Manihot glaziovii*. Whether or not the artificial cultivation of rubber may prove successful, the East African Co. may find the rubber trade profitable through the marketing of the product of the forests already existing in portions of the territory in which its work lies.

THE subject of adulterated rubber, found in some of the biscuits coming from Pará lately, has received free discussion among importers, and all crude gum has been inspected as rigidly as possible as it is passed from hand to hand. Brokers say that similar adulterations are frequently found in Borneo gum, and some are inclined to believe that the Pará incident is simply sporadic, a native occasionally mixing his dinner in the biscuit, or possibly the milk getting sour. At any rate ton after ton of rubber has been cut and examined in New York for further evidence of similar adulteration, but it is understood without avail. Some importers are very careful inspectors all the time, suspecting lots that shrink unduly within a certain period, and as rubber has become more or less expensive when it reaches its final disposition, their efforts are certainly not misplaced.

THIS is the season of the year when rumor filters in from Pará that the number of laborers who have gone into the forests is unprecedentedly large, and that the supply consequently will be more than ample. Six months later heart-rending reports will enumerate the great proportion of laborers that have died of yellow fever and small-pox, and prices will stiffen. Pará merchants like to "bear" the price while they are buying, and "bull" it when selling, and a first-class man there is very skillful in this work. It is as with the wheat speculator; one wonders after reading their stories at the end of a crop season that it was ever possible to raise a bushel, and when the harvest comes the wonder is that it ever can be all sold. Supply and demand keep the smaller speculative commodity of rubber within a narrow range; the labor seems to be a very elastic quantity, and always available when needed.

MR. S. S. SCHINDLER, of New Haven, Conn., has resided for some years in Bahia in Brazil, and is mentioned as having invented a process for immediately converting the milk into rubber as well as for preserving the milk for a long time after its extraction from the tree, and then converting it as quickly as if it were freshly drawn.

An English View of the Rubber "Combine."

IN commenting upon the plans of the United States Rubber Co., as outlined in recent numbers of this journal, a recent number of the London *India-Rubber and Gutta-Percha Journal* says:

"Fifty million dollars is the amount of capital which these enterprising gentlemen propose, sooner or later, to devote to their little experiment, and, with such a sum, if judiciously manipulated, you can of course accomplish much. But, however this may be, we have no desire on the present occasion to criticise the intentions or methods of this latest development of the American 'combine' mania, so far as concerns its home trade. If Americans find it pleasant to submit to all these new-fangled arrangements for making consumers pay dearly for everything they require, it is not for us outsiders to interfere. And besides, we freely admit that some of the *alleged* intentions of the new 'combine' are legitimate and laudable. It is perfectly proper for them to get their litharge and whiting, and other requisities for producing low-class rubber goods, as cheaply as possible, by manufacturing for themselves the various adulterants for which at present they have to pay a high profit to other people. Whether or not these advantages will result in the 'combine' carrying out its good resolution to 'raise the standard of quality,' of course remains to be seen.

"Leaving, however, these matters, which chiefly concern the American public, we must advert to a more ambitious project which the American Rubber Trust has in view. Not content with controlling the supply of rubber goods to their fellow-countrymen, and with influencing the speculations of Wall street, these combining gentlemen also essay a bolder game. Where Vianna, *alias* Gondoriz, deservedly met with contemptible failure, the new Rubber Trust thinks to achieve success. They propose to tamper with the rubber supply—to buy up all the rubber transportation steamers of the Amazon river, and, instead of buying rubber at Pará, to procure it at the very source of supply, and send it off at once to New York.

"Are British merchants and manufacturers willing to sit still and permit this scheme to be carried out? Will it suit them to find the supply of rubber from the Amazon valley carried off to the States? Do they like the idea of going, cap in hand, to New York for their best Pará, and contenting themselves with the leavings of the Yankee mills? Surely British capital and British enterprise can find out the way to 'frustrate their knavish tricks.' It would not surely be impossible to start an entirely new line of rubber steamers on the Amazon river, and transfer their cargoes to British vessels at Pará, for shipment to London or Liverpool. And then, too, have we not a colony of our own on the South American shores, stretching far back towards the native home of *Hevea Brasiliensis*, and, if properly explored, possibly containing in itself an abundant source of rubber supply. At any rate, a railway (even of the most primitive character) from Georgetown to the Brazilian frontier (or beyond) would tap the sources of rubber supply along the big Amazon tributaries, and prove of incalculable advantage to the British rubber industry, and also to other trades concerned in tropical products.

"We are far from presuming to dictate to the trade any special course that should be pursued in the present juncture of affairs. We merely wish to impress upon all concerned in the rubber industry the necessity of keeping wide-awake as to these transatlantic little games. Unfortunately, the trade has, at present, no definite organization ready at all times to deal with the various occurrences that may require immediate consideration. Cannot the gentlemen who are finding the principle of associa-

tion so efficacious in dealing with the odorless garment question, look at the matter in a wider aspect?

"* * * We have heard of so many bogus schemes amongst our western cousins that we are never surprised at finding some grandiloquent project turn out to be only another of them. The ways of Wall street are inscrutable, and there are not wanting significant features in the case, leading us to think that this so-called Rubber Trust may possibly turn out after all to be only a precious scheme for enabling certain stock-jobbers to get something for nothing."

German Rubber Factories.

THE facts gathered by the United States Consuls in Germany respecting the India-rubber industry in that country are reviewed at length in the *Gummi Gutta-Percha- und Asbest-Journal*, of Dresden, in its issue for May 15. Our contemporary asserts that whereas some of the Consuls have entered upon their duty in earnest, striving to do justice to the subject, others seem to have regarded it unnecessary to seek information from any one else, but to have relied upon their own knowledge, "which was more than incomplete." This complaint is made with regard to the reports on the rubber industry in Hanover—where it has reached important proportions—and also in Dresden.

It may be mentioned that reports were not received from every district and that the expression, "In Hanover there is an extensive manufacture of rubber toys," which the *Journal* quotes with much surprise, appears incidentally in the report by Consul-General Mason, at Frankfort o/M, in the course of a valuable report by him on the rubber industries immediately under his notice. We are very glad to add to the Hanover list the names of the following firms given by the Dresden paper:

Continental Caoutchouc- und Gutta-percha Compagnie, joint-stock company, one of the most important establishments in Germany or in Europe, manufacturing mechanical and technical rubber goods, bicycle-tires, rubber tissues, rubber balls, etc.

Hannoversche Gummiwaarenfabrik (Ernest Bremeyer) makers of technical goods.

Hannoversche Gummikamm-Compagnie, important manufacturers of all hard-rubber goods, including combs and toys.

Neue Hannoversche Gummiwaarenfabrik, formerly Lennark & Co., technical goods.

Otto Köhnel & Son, old manufacturers of packings, asbestos and rubber-asbestos.

Hannoversche Caoutchouc-, Gutta-Percha- und Telegraphen-Werke, joint-stock company in Linden, recent large works for mechanical goods, telegraph wires and rubber balls.

Münden-Hildesheimer Gummiwaarenfabrik, formerly Wetzell Brothers, old established, technical and surgical goods.

Albert Kunth, and several smaller establishments.

The list of Dresden manufacturers as given by the Consuls is also extended by the *Journal* by the addition of such names as these:

The Saxon-Bohemian Gummiwaarenfabriken, joint-stock company at Löbtau, technical and surgical goods and balls.

H. Schwieder, technical goods.

Bohemian-Saxon Gummiwaarenfabrik at Zittau, technical goods.

At Radebeul a manufactory for packings, etc.; the Leipsic Gummiwaarenfabrik, formerly Marx, Heyne & Co., manufacturers of surgical goods, and several others at Plagwitz, Lindenau, Markranstadt, and so on.

The *Journal* adds: "It is also puzzling to us that the important rubber industry of Berlin has not been mentioned. Also Magdeburg, Dortmund, Arnstadt, Finsterwalde and other German cities have rubber industries."

TO THE EDITOR OF THE INDIA RUBBER WORLD: In your issue of March 15 we find a report about India-rubber works in

Dresden which is not quite true. Perhaps it is already rather old. In Dresden exist the following rubber mills:

Our own limited company, with branch works in Bohemia; capital 1,000,000 marks (\$250,000), making all kinds of mechanical goods, matting, bicycle-tires, surgical goods, balls, balloons, etc.

Another is a new rubber mill in Vieschen-Dresden, making mechanical goods, a private concern; also some makers of surgical and other goods of fine cut sheet which they are buying elsewhere.

Yours truly,

SACHSISCH-BOHMISCHE GUMMIWAAREN-FABRIKEN
ACTIENGESellschaft.

Dresden-Lübtow, March 26, 1892.

The Use of Rubber Stamps.

A CORRESPONDENT of *Business* (New York) writing from Grand Rapids, Mich., says: "I noticed in an office here the other day a novel and convenient way of keeping the rubber stamps that nearly every bookkeeper has use for. They were suspended by rubber cords, hanging just high enough to clear the top of the desk, over the inking-pad; the upper end of each cord was fastened to the top of the desk, or office railing, and there was enough elasticity in the cord to allow the stamp to be used at a distance of two or three feet from where it hung when not in use. When through using, the stamp is swung out of the way by the supporting cord. It also seems a good way to keep the erasers, etc., which are usually found on the opposite end of the desk from the man who wants them in a hurry."

This paragraph from the *Western Stationer* (Chicago) may give the rubber-stamp manufacturers a hint of value respecting the importance of keeping up the quality of their work to a high standard:

"Whenever a wholesale house receives a letter from a merchant, says an exchange, written on a scrap of paper without anything to indicate what sort of business he is engaged in, or the sheet is ornamented with one of those hideous daubs called rubber stamps, his name is immediately checked with an 'S,' which indicates sucker. This mark serves as a notice to the travelling salesman that the said merchant is a fit subject on whom to palm off all the old worm-eaten, shelf-worn, shoddy goods that he possibly can. The poor merchant then wonders why his customers never come back the second time to buy goods. The rubber stamp is the cause."

Vulcanite Teeth-Plates at Second-Hand.

OF all the odd trades in New York City that unearthed by a *Telegram* reporter is the most peculiar. On a sidewalk stand in Vesey street, below Church, a shrewd dealer had displayed a heap of second-hand artificial teeth. In reply to an inquiry he said: "Yes; at times I sell a great many sets of these teeth. Where I mostly get them is at pawnbrokers' sales. I buy them for ten, twenty and thirty cents, and sell them sometimes for \$3. I have had old men and old women—poor people, of course—walk up to my stand, pick out a set, examine them try them, and immediately purchase, saying that they were fitted better than a dentist could suit them. An old man purchased an upper set from me last winter, and he was so well pleased with them that he brought his wife here last week to get a set. I had none at the time, and he promised to call this week. A person might as well save a few dollars in buying teeth as in any other way. Take them home, wash them, and they are just as good as new—in fact, better, for they have been 'broken in.'"

Propelled by a Rubber Belt.

A YOUNG Californian, Amos Lane, has invented a steam-motor sleigh which has double runners twenty-four inches wide with a groove fourteen inches wide running through the center. At right angles to the runners in each end of the sleigh-box are two four-foot cylinders. A rubber belt, on which are set twenty-four V-shaped shovels, connects each pair of cylinders from front to rear in the groove of each runner. The apex of each shovel points downward or upward as the belt rolls around the cylinders, and when on the under side presses into the snow or ice. If the snow is very hard or the sleigh is travelling over ice only, the tips of the shovels penetrate and the sleigh glides along as smoothly as a toboggan. An engine of six horse-power is placed in the rear of the vehicle. The whole machine weighs less than 2000 pounds. It is said that the machine needs no roads, can climb up-grades and go anywhere, over snow or ice, where the way is not obstructed by timber or cliffs. The inventor thinks the problem of Arctic travel is solved through his machine.

One Way of Dealing With Competition.

A CAREFULLY-CONDUCTED corporation in dealing with jobbers insists that the prices be maintained. Only one jobber is selected in a certain section. The result proves to be that when other manufacturers enter that locality and cut prices, they soon reach a point where profits stop, and the demoralization is very expensive before recuperation can take place. One result of the struggle that ensues is that the manufacturers throw in a lot of "seconds" and "thirds" to keep pace with the competition, which are often returned, entailing additional losses. The manufacturer who maintains his prices rigidly keeps up his qualities, and thereby his reputation, and after the storm has spent its first force, he goes on in the even tenor of his way, and naturally makes money. This is one solution of the vexed problem how to deal with ruinous competition.

Deterioration in Rubber Belting.

SOME remarks on the injury to the rubber-manufacturing industry from the use of poor materials are made by "Abra Cadabra" in the *India-Rubber and Gutta-Percha Trades Journal*. In relation to belting he writes:

"A good belting was made years ago and extensively used, being found particularly well adapted for driving purposes in situations exposed to wet, or in factories unusually dry and hot, as well as in rooms moist with steam, such as paper-mills, dye-works, etc. So completely successful did this class of belting appear to be at one period that the expression 'There's nothing like leather,' had well-nigh become obsolete. How stands the case to-day? Ask the mill-owners and mill-managers of Lancashire and they will tell you rubber belting has been to a large extent discarded, and its place taken by other sorts. And the cause? Simply deterioration in quality. Quality getting gradually worse, the consumption became 'small by degrees and beautifully less.' Common and light-weights of cotton duck began to be employed in its manufacture, with scarcely sufficient rubber to stick it together, while as to the outside (commonly termed rubber) well, it would not bear description."

ASBESTOS soap is a new compound, which is said to work excellently in cleaning mirrors.

NEW GOODS IN THE MARKET.

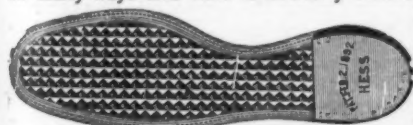
INVENTIVE genius for the past few years has seemed to run in the direction of inkstands, with the result that a great many inkstands have been produced and a great many patents obtained which had better have been refused. With this knowledge in mind it is rather refreshing to find an inkstand which has points of merit and which is at once recognized as something that writers want and will purchase. The Davis inkstand is sold on its merits and it is sent out with the understanding that money be refunded if it does not give satisfaction after thirty days' use. The inkstand is so arranged that when the



pen is dipped it inks it to a proper height, bringing the ink fresh from the center of the fluid and thus keeping it pure until used. The reaction is by a float which always has the same elasticity and will last a life-time. When it is known that this is now introduced in every State in the Union and that some single firms have purchased as many as a thousand of them for use in their offices, it will be seen that there must be genuine merit in the article. They are also in use in the Government departments at Washington and by the State officials in a majority of the States of the Union. Manufactured by Emory Davis, Times Building, New York.

The Hess Bicycle-Shoe.

A PATENTED shoe which is rapidly growing in favor among bicyclists and athletes is shown in the accompanying illustration. In many ways this shoe is radically different from any other



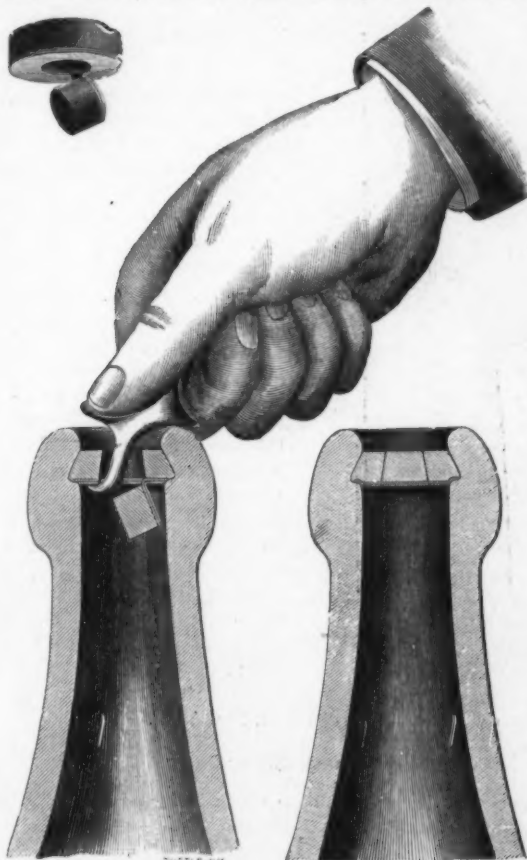
THE HESS BICYCLE-SHOE.

bicycle- tennis- or yachting-shoes on the market to-day. The sole is composed of rubber and leather so arranged that the leather overlaps the rubber and prevents its tearing at the edges. When on the foot it has the appearance of an ordinary walking-shoe and it can readily be half-soled, which of course is a difficult matter with the regular rubber-soled goods. As far as flexibility and lightness go, it is all that can be desired. Manufactured by N. Hess & Brother, Baltimore, Md.

A Simple and Efficient Bottle-Stopper.

IT is well known that a great deal of money has been made out of rubber bottle-stoppers and it seemed that the acme of perfection had been reached in the production of these goods. In the bottle-stopper shown in the accompanying illustration, however, is to be seen something that is simplicity itself, and yet that is fully as effective as the most costly stopper that has ever been put on the market. This stopper is simply a lozenge-shaped seal made of India-rubber. This is covered on the under side with an impervious facing which protects the bottled

liquid against any contamination from contact with the seal. The seal has a plug in the center which keeps it absolutely air- and liquid-tight and yet facilitates its extraction. The seals are inserted by a patented sealing machine, a description of which is not necessary in this place. When one wishes to extract one of the rubber seals a little instrument is used which pries the plug out of place and allows the metal point to be placed under the edge of the seal, and a very little pressure will then cause it to collapse, when it can be easily withdrawn from the neck of the bottle. One end of the extractor may then be used as a rubber-stopper for the bottle. The points of advantage claimed for this seal are the absolutely tight joint that it makes; the ease with which it can be inserted or extracted; that



THE RUBBER SEAL BOTTLE-STOPPER.

it keeps the liquid fresh and effervescent; that it does not contaminate the liquid; that, having no wire loops or attachments, it is absolutely free from rust; that it resists the strongest internal pressure; that it is externally removable and does not remain in or attached to the bottle and thus interfere with cleansing it; that as there is no wire loop projecting over the top it makes a neat package and is easily wrapped in foil. When the seal is pushed in it will collapse in passing out, but is so easily removed as to prevent chipping from the top of the bottle by the extractor. Manufactured by the De La Vergne Bottle and Seal Co., East One Hundred and Thirty-eighth street, New York.

Rubber Soles for Steamer-Decks.

On the deck of an ocean liner, or vessels of lower quality, or in yachting—to which our seaboard dwellers who have the cash take so kindly at this season—the foot is apt to slip, especially after the vessel has passed through its daily ablutions. A Broadway dealer in New York, who glories in misspelling the qualifications of his goods to attract greater attention to them, and who has a large factory at Brockton, Mass., has adopted the plan of attaching a rubber half-sole to his shoes sold for wear on steamers. At first he made them corrugated in order to obtain a grip on the deck, but the sailor anathematized them as they tattooed his deck after it was cleaned. He then bored three holes in the sole of the shoe, and these acting on the principle of suction are sufficient to prevent slipping. The device is not patented and as he charges \$1.50 extra for this wrinkle, which of course need not be made of an extra quality of rubber, he may expect soon to have a host of imitators if the demand prove one of much proportions.

Rubber Coats in a New Pattern.



NEW PATTERN RUBBER COAT.
Rubber Co., No. 54 Vesey street, New York.

THE garment shown in the accompanying illustration is one of a new pattern. The garment is made up in the very best manner in either single- or double-texture goods, the seams being turned, sewed and cemented. When treated in this way, it is absolutely impossible for them to come apart or leak. The rubber coating of the cloth is a calendered coating and after making up the goods are steam-vulcanized. The compound used is the finest Pará rubber, and the garment throughout, while it is thoroughly waterproof, is exceedingly light in weight and one that can be worn either in summer or winter. The cape is of the long military cut and is detachable. This garment may be made up from any one of hundreds of patterns of cloth that this company have in stock. These goods are manufactured by the Commonwealth

Colored Rubber Shoes.

A FIRM in Boston have been advertising tan-colored rubber footwear and their advertisement has attracted a great deal of attention. To begin with, one who has russet shoes feels a little doubt about putting black rubbers over them; therefore it occurred to the manufacturer to make a rubber that should be as near the color of the russet shoe as possible. The manufacturers who designed these goods are the well-known India-Rubber Glove Co. of Naugatuck, Conn. The goods are of a dark wine color and have an exceedingly rich effect. Of course people will at once ask whether it is possible to make a compound as good as in black goods. That, however, should be answered by their experience with rubber clothing, as certainly the best grades of colored and striped clothing are fully as durable as the plain black. Whether this departure in the line of color is to inaugurate a new order of things, is a question. No doubt the Chinese would be delighted with white shoes, and

certainly a white zinc shoe would wear exceedingly well. It is, however, probable that in spite of the elegant finish and handsome color of these tan-colored rubbers, the bulk of goods for years to come will be the staple black.

Business of a Mechanical-Goods House.

THE New Jersey Car Spring and Rubber Co. report a business of large proportions this season, keeping a force of 350 men fully employed. Work in the bicycle department progresses night and day. In every department orders are coming in a way that is very gratifying. The sale of their "American Chief" fire-hose has been very large. Good orders are also being received for air-brake and steam-hose from railroads. This corporation business has now reached a point where it has no season for purchasers to supply their wants, the buyer being in the market all the time, and it is so steady that manufacturers always keep a good supply in stock. Another branch of the business that has developed very rapidly within a year is the use of galvanized strap iron lined suction-hose for threshing-machines in the West. Small quantities had been made for two or three years, but eight or nine months ago the demand for it broke out all over at once. An order now is for 10,000 feet at least and the Western jobber sometimes gets tired of making frequent orders and makes a break for 100,000 feet. No one knows where this new use for hose will end and to what magnitude it will reach. In mats a great business has been done, and the workmen are getting very proficient in cutting out the perforations. At first the body of the mat was chalked off, but now there are several men so well trained that they cut without previous preparation, doing the work rapidly and accurately. N. D. Williamson, of the New York city office, has plenty to do in keeping pace with the business flowing into the company.

Celluloid Boot or Shoe Soles.

TO THE EDITOR OF THE INDIA RUBBER WORLD: Why could not a shoe or boot sole be made of celluloid? I have seen goods made of a variety of celluloid compounds and some of them were very tough and were comparatively cheap. Of course leather is cheaper, but it is rarely waterproof.

GEO. P. NORTH.

Lawrence, Mass., June 2, 1892.

[It is doubtful if this suggestion is of any practical value. Wearers of shoes have a faculty of putting their feet against stoves, or standing on hot registers that might result in pedal conflagrations. Nor is celluloid a material that would wear as well leather, and it would cost more than rubber and be less flexible.—EDITOR.]

How Brewers' Hose is Cleaned.

A CORRESPONDENT in the *Western Brewer* describes the process of cleaning the rubber hose used in brewers' cellars. He says they screw the lengths together and drive live steam through them until it plays out through the other end. This is perhaps one reason that brewers' hose fails to last as long as it should. A jet of live steam passed through any hose will in time injure it, and for hose that is not specially compounded for that purpose it is a dangerous practice. A much better way would be to take the hose in its original lengths and force a scrubbing brush through it, using water in which there is a small percentage of soda soap.

TRADE AND PERSONAL NOTES.

THE American Wringer Co. have taken additional office room in New York, and now occupy the ground floor of No. 99 Chambers street, the Union Nut Co. having vacated in their favor. This floor has been handsomely fitted up to suit the necessities of the company. The new factory for making rubber rolls at Woonsocket, R. I., is approaching completion and it is expected will be ready for occupancy by October 1. The company will then employ 250 men and increase their capacity, which now represents an output of 600,000 wringers per annum. Since the new company concentrated the business it has been found practicable to reduce prices about 5 per cent., and also declare handsome dividends. Two new styles of wringers have recently been placed on the market, the "A. W. Co.," having steel springs and a straight tie-rod, an iron-frame wringer; and the "Imperial" with two pressure screws and cog-wheels, a wood-frame wringer. The company report a good export business, and a growing demand from the South, where the wringer is slowly displacing the muscular wrists of the colored "aunties," who look upon this innovation on wash-day life with suspicion born of deep ignorance.

—C. H. Bishop, formerly with the Columbia Rubber Co., has accepted a position with the American Rubber Co., and will devote his energies to New York State. G. B. Widner of the American company has found the days not long enough to attend to the growing custom coming from Pennsylvania, and E. A. Knight will assist him in representing that state.

—No changes in the personnel of the American Rubber Co., recently absorbed by the United States Rubber Co., have been made so far, and none are anticipated.

—G. E. Austin, of the Imperial Rubber Co., has been appointed sole agent of the American Steam-Packing Co. of Boston.

—The laws of the different States making Saturday a half holiday were evidently enacted in disregard of the economical working of the rubber factory. The consequence has been that some of the factories in New York close down all day, while the United States and New Brunswick companies in New Jersey have, at the request of the employes, decided to work all day.

—Lowenthal, Doran & Co., under date of July 1, advise THE INDIA RUBBER WORLD that they have established themselves in business as African produce brokers, at No. 5 Irwell Chambers, Fazakerley street, Liverpool. Their business will embrace the execution of commissions for African rubbers.

—The Tyer Rubber Co. (Andover, Mass.) have issued under date of July a circular headed "New Goods," being a supplement to the price-list of the "Tyrian" rubber goods. It is devoted to descriptions, with cuts, of the Tyrian syringes Nos. 7 and 19; Germanic syringe; Tyrian powder-blower and plant-sprinkler, and Tyrian No. 17 Imperial atomizer.

—J. W. Wallace, formerly with the American Rubber Co., has entered the firm of Lagerman & Backe, export agents, New York.

—Albert Fischer of St. Paul, Minn., and Frank C. Howlett of Syracuse, both agents for the American Rubber Co., were in Boston last week. E. G. Stearns, also agent for the same company, will spend a summer vacation at York Beach, Me., with E. H. Paine.

—The Hamilton Brown Shoe Co., of St. Louis, have in their show-window devoted to rubber goods a tame mouse, which exercises himself exclusively in the catching of flies, much to the amusement of the outsider.

—The Boston Belting Co. are making press-rolls for the two largest paper-machines that have ever been built in this country. The rolls are 134-inch face and about 20 inches in diameter, and the casting 15 feet over all.

—C. H. Dale, sales-agent of the Peerless Rubber Manufacturing Co., New York, has gone West on a trip which he describes as being business and pleasure combined, but chiefly business.

—The Evans Artificial Leather Co. have their factory plastered with magnesio-calcite, which makes every room absolutely fireproof.

—The Home Manufacturing Co. is the name of a new concern manufacturing Acme paper-fasteners in Trenton, N. J. The leading spirits in it are J. O. Stokes, of the Home Rubber Co., and Samuel F. Randolph, of the Commonwealth Rubber Co.

—William T. Barutio, of Boston, who is well known in the rubber trade, is having a fine lot of railroad orders just now.

—The Cable Rubber Co., of Boston, have been so busy of late that they have been obliged to put in a new three-roll calender, Birmingham make, in order to catch up with their work.

—One of the keenest mechanical-goods manufacturers said the other day: "I am surprised that no one ever took out a patent on the air-cushion rubber tire; that patent would have been extremely valuable and would have laid over all that are now in existence."

—The Millard Manufacturing Co., of Providence, R. I., manufacturers of druggists' sundries, have sold their business to Mr. W. K. Atwood, of the same city, a man who was formerly a manufacturing jeweler.

—A sample of the "doctored" Pará rubber that was purchased by Mr. Joseph Banigan, was shown recently in George A. Alden's Boston office. In separating the layers, the gum appeared to be brittle, breaking almost as if it were loaded with substitute. When it was first taken out of the case it also had a curious smell and the outside of each layer appeared to be glutinous. It is probable that the infusion with which it was loaded was some one of the many rubber-like saps that are to be found in the South American forests.

—The Johns-Pratt Co., of Hartford, Conn., have taken a large contract of work for the Philadelphia Traction Co., comprising insulators for span-work, strain-insulators, center pole bracket-insulators, guy-insulators and feed-cable insulators.

—Orders from rubber, dye and kindred trades are keeping the Barney Ventilating Fan Co. of Boston at work day and night. The scoop-blade fan seems to be a winner.

—A new Goodyear rubber store has been opened at Nos. 54 56 Cornhill street, Boston. It is owned by Prescott Brothers, who formerly occupied a store at Nos. 62-64 of the same street. They are now carrying a line of rubber goods, and are very nicely fitted up.

—The store in Boston occupied formerly by the Elastic Tip Co., has been taken by E. B. Silliman, lately of Detroit, Mich., who will engage in the rubber business.

—The Hodgman Rubber Co. have made extensive alterations and improvements in their Boston store and report a very nice trade in their line of goods.

—The largest single order ever received for reducing-valves was placed, on June 21, by the Consolidated-Car Heating Co., with the Mason Regulator Co., of Boston. It was for 500 locomotive reducing-valves.

—William E. Barker, Joseph L. Allen and William T. Jenney

have formed a copartnership under the style of the Enterprise Rubber Co. at No. 135 Essex street, Boston, for the purpose of conducting a general rubber business. They will represent as agents the Goodyear's India-Rubber Glove Manufacturing Co., of New York, and the New Brunswick (N. J.) Rubber Co.

—Another of the novel trade publications of the Stephen Ballard Rubber Co., New York, represents when viewed from the front a roll of their rubber belting, and, from the back, the stitching of their "Duck" brand of belting, prices of which are given inside.

—Mr. Emerson, who has been traveling for the Apsley Rubber Co., has taken charge of their store at Lowell, Mass.

—Mr. Foster, of Lamkin & Foster, is just back from a three weeks trip to the Rangeley lakes.

—Samuel F. Randolph, of the Commonwealth Rubber Co., is off on a business trip through the West.

—The old rubber factory at Summit, N. J., has been sold to the two sons of W. H. Deforest, of New York, and will be altered into a silk factory. It has been operated as a mackintosh factory by W. B. Wygand, who has disposed of the rubber machinery to various parties.

—W. H. Truslow, who sold the Acme Rubber Works on Center street, New York, to G. Gilbert, contemplates entering the same line of business again.

—G. Gilbert has bought from L. B. Truslow the Acme Rubber Works, and will continue the business at the factory, No. 43 Center street, New York. Mr. Gilbert has been in the rubber business fourteen years, and for the past two has been foreman of the Acme company. Mr. Gilbert will devote most of his attention to fine mold-work, for which his long experience has especially fitted him.

—The elastic-web business seems to be in a state of prosperity, calling for new mills and extensions in different sections of the country. Among new enterprises can be enumerated J. H. Buckley & Sons, Norwalk, Conn., who will extend their brick factory in that place; a new factory at Athens, Ga., to be built by local capitalists, and the increase of the capital of the Humboldt (Tenn.) Suspender Co. to \$12,000.

—The Atlas Rubber Co., of New York, have filled several orders lately for the Medical Department of the Army and Navy. Among them is one for 500 atomizers and 450 fountain syringes. The company have received some very gratifying orders from the principal cities in Mexico, results in part of Mr. Herbert's trip. Mr. Doty is placing upon the market, among other articles, some new shapes in water-bags, which conform closely to the contour of the neck.

—The Easthampton rubber companies held their annual meetings in the last week in June and elected officers as follows: Nashawannuck Company—Treasurer, G. H. Newman; Directors, G. H. Newman, J. B. Ford, G. H. Leonard, M. F. Dickinson and John Mayer. Glendale Elastic Fabric Co.—Treasurer, J. W. Green, Jr.; Directors, S. T. Seelye, E. T. Sawyer, E. D. Candee, John Mayner, J. W. Green, Jr. Easthampton Rubber Thread Co.—E. T. Sawyer, president and general manager; F. W. Pitcher, treasurer and clerk; Directors, L. S. Stowe, W. G. Bassett, E. T. Sawyer, F. T. Ryder and F. W. Pitcher. The Nashawannuck declared a semi annual dividend of 2 per cent. and the Easthampton one of 6 per cent. for the same time.

—A twelve-ton gear has lately been placed in position in the engine-room of the Alice rubber mill of the Woonsocket Rubber Co.

—The E. Read Goodridge Co., at Newport, R. I., expect to occupy the whole of the Perry Mill building. They have recently added considerable new machinery to their plant.

—The New York Belting and Packing Co. report having

transacted in the past four months a business of \$1,200,000, or about 25 per cent. more than usual.

—There is an unusual call for more help in the factories; the New Brunswick Co. being short, as are also the American.

—Vedders & Co., importers of India-rubber goods at Rotterdam, whose advertisement will be found on another page of this issue of THE INDIA RUBBER WORLD, are desirous of receiving catalogues, price-lists and samples of American rubber goods. They have extensive connections and excellent facilities for business.

—J. T. Atwater and Carl A. Rosgren will represent the Cable Rubber Co. in the West this fall.

—Mr. William H. Corner, Jr., the New York representative of the Boston Rubber Co., who for the last four years has been living at the Metropolitan Hotel, is now located at the Park Avenue Hotel. His change of location is but one of many indications of the up-town movement of the center of trade in many lines in New York.

—The Peerless Rubber Manufacturing Co., of New York, are putting a brick addition on their mill at New Durham, N. J. In addition to this their business has increased so that they are obliged to add considerable new machinery, a part of which will be a calender, and a water-tube boiler, both from the National Iron Works, New Brunswick, N. J.

—The Colchester Rubber Co. have a weather bureau at their mill which receives daily reports from Washington. By a flag system in the daytime, and a lantern system in the night, they are able to let the townsfolk know the weather probabilities. Mr. Irving Watkinson, son of the president of the company, is the weather expert, and so familiar has he become with Nature's moods that he is able sometimes to avoid the mistakes of the Washington wiseacres, by substituting correct prophecies of his own.

—A curiosity that few visitors see when going through the plant of the Camden Rubber Co., at New Haven, Conn., is a box-nailing machine. The way in which it drives a dozen nails at a blow and finishes shoe-boxes, would make the old-fashioned hand-workers gasp with amazement.

—Mr. B. F. Pennington, general manager of the Standard Co., Brockton, Mass., has been west on a ten days' trip. The Standard Co., by the way, are very busy and of late have had hard work to keep abreast of their orders.

—David Hale, of Boston, a well-known pioneer in rubber, details an experience that he had some years ago that will be of interest just now. It seems that he bought some up-river fine Pará that looked first-class. When he came to use it, however, it proved to be mixed with some inferior gum. This adulterant had some of the properties of gutta-percha, and some properties that were entirely unique. It was so hard and tough that a sharp axe could not be driven through it. In hot or cold naphtha it did not swell as Pará gum does, but slowly granulated. Small nodules of it made excellent erasers, which was the only use it seemed to develop.

—The "Brownie" pictures of Palmer Cox have a world-wide reputation and always attract attention. A picture in which these grotesque little creatures figure will soon be in the hands of the retailers of garden-hose. It depicts a broad field in front of a great manufacturing plant where a fierce battle is being waged. Instead of bullets streams of water are aimed at opposing forces, the guns being lengths of garden-hose. The battle is decidedly in favor of the group of Brownies who are clustered about a flag-staff on which floats a pennant bearing the inspiring words "Black Line Spiral." Their hose is throwing solid effective streams without a break, while the opposing army in comical confusion, with burst hose, are just on the verge of a

disastrous panic. The moral of the whole picture is "buy Black Line Spiral" garden-hose, which is a specialty of the Boston Woven Hose and Rubber Co.

—In the variety of show-cases at the Patent-Office in Washington devoted to boots and shoes is a small corner devoted to patented rubber footwear. The sight-seer, if he knows anything about the rubber-men of to-day, will see several names that he will recognize. Those most plainly in view are George Watkinson, Thomas Mayall and E. S. Brickford. There are many others there but the grouping is so poor that it is almost impossible to decipher them.

—The use of rubber bulbs in connection with blast-furnaces to charge the latter with air has been adopted in Philadelphia. The same principle has been adopted successfully also in connection with plumbers' furnaces.

—Eugene Herbert, of the Atlas Rubber Co., is at present in Mexico, and will return about the first of August. Business is very good in that section, and in Texas, where Mr. Herbert recently devoted much time.

—E. Elbersen, of the Manhattan Rubber-Shoe Co., has taken handsome and commodious quarters at No. 144 Duane street, in the store of Park, Bell & Co. The factory at Setauket, L. I., is full of orders, just now on tennis, but with a good outlook for the entire season on all classes of goods.

—The Minneapolis store of the Cleveland Rubber Co., will be managed hereafter by H. G. and William P. Plant, whose control began on June 1. They are said to be Plants that will flourish.

—F. W. Heitman & Co., Houston, Texas, have been appointed agents for the Cleveland Rubber Co.'s mechanical goods in Southern Texas. Mr. Heitman was in New York a short time ago and spoke highly of the prospects for trade this year.

—The New Brunswick (N. J.) *News* hears it is probable that new varnish and buckle factories may be erected in that town to supply the various factories in the combination, which would be an important addition to local industries.

—The H. F. Taintor Manufacturing Co., New York, report a steady sale of their Paris white and whiting to rubber manufacturers, the distribution being even, month after month. The product is gathered from the extensive deposits in New England.

—The Fernbrook Carpet Co., Yonkers, New York, who have had a small knitting plant for making rubber linings, are adding quite extensively to their machinery.

—The Vant Woud Rubber Co. have removed to spacious new quarters at No. 47 Warren street, New York, and are having a good trade in syringes, atomizers, and other such goods.

—The Colchester Rubber Co. report that they have had an excellent season in the sale of their "spading boot."

—The Eureka Fire Hose Co. have moved into their new factory in Brooklyn, and now have one of the largest concerns in the country. This manufactory was finished none too early, as a look through their Barclay-street warerooms, in New York, plainly tells the story of a want of stock, it being passed along as fast as it comes in.

—Messrs. Howlett Brothers, of Rochester, N. Y., have had an exceedingly satisfactory season in rubber clothing.

—The Queen City Engineering Co., of Buffalo, N. Y., have added a large stock of belting, packing and hose to their line of mill-supplies.

—H. J. Patterson, formerly with the Cleveland Rubber Co., has opened a new store in Cleveland, on Water street. He carries a full line of rubber goods and mill-supplies.

—Frank Howlett of Syracuse, N. Y., has purchased O. M. Clarey's business and consolidated the two stores.

—E. M. Hull, of Cleveland, Ohio, has sold his retail store on Euclid avenue to a Mr. Brown and is now devoting himself wholly to the wholesale trade.

—The Wellman Sole-Cutting Machine Co., of Boston, have just put one of their machines into the cutting-room of the Colchester Rubber Co.

—The city of Rochester, N. Y., recently bought quite a lot of fire hose which was placed through Mr. Chamberlain of that city, who by the way has had a large trade in mechanical rubber goods this season.

—Frank W. Brigham, formerly of the Standard Rubber Co., is now in the electrical business in New York State.

—The Chadwick Lead Works of Boston are covering a great deal of electric cable with lead. Much of this work as done by them is for the American Electric Works of Providence, R. I.

—In answer to repeated inquiries it may be mentioned here that Mr. Roberts of Newark, N. J., is quite a large manufacturer of cut sheet-rubber.

—It is said that a factory in Mamaroneck, N. Y., for the manufacture of Gutta-percha sheet will be changed soon into a factory for the production of rubber goods.

INDIVIDUAL MENTION.

ALBERT KAHN, of the firm of Hecht, Levis & Kahn, of London, England, the largest importers of rubber in Great Britain, was a visitor in New York for three weeks during June, and returned to England on the *Columbia* on the 21st of that month. During his visit he made trips to Boston and Niagara Falls, and apparently was well pleased with his first visit to the United States, so much so that he promised to dispatch Mr. Hecht to this country on the next steamer to share pleasant memories with him of what could be seen here. Mr. Levis, whose name is still included in that of the firm has long been dead. Mr. Kahn while in this country was the guest of George A. Alden.

—William Morse, of the American Rubber Co., has been on one or two piscatorial excursions on the Long Island coast within the past month.

—G. B. Widner, of the American Rubber Co., is enjoying a two weeks vacation on the Atlantic coast in New Jersey.

—George F. Hodgman, president of the Hodgman Rubber Co., left on the *City of Paris* on July 2 for a two months' pleasure trip on the Continent.

—Ratcliff Hicks, president of the Canfield Rubber Co., is in Europe on a trip which is partly for pleasure and partly for business. While abroad he will visit the agencies of the company, the principal of which are in Paris, Berlin, London and Vienna.

—B. T. Morrison, treasurer of the Reading Rubber Works, is living this summer in North Andover, Mass., where he has a very fine residence.

—George H. Hood, of the Boston Rubber Co., has purchased a place in Brookline, Mass., which is one of the most delightful suburbs of Boston, and is so well satisfied with it that he will probably stay there this summer instead of going to the seashore.

—A. G. Flandrau, secretary of the Canfield Rubber Co., is spending the summer in the Ramapo mountains, a delightful spot overlooking the Saddle river valley, about twenty-five miles from New York.

—George T. Allen, manager of the rubber department at Charles W. Smith's in St. Louis, and Miss May Killingsworth, of the same city, were married on the evening of June 11.

—Mr. Frank Hopewell, president of the Reading Rubber Manufacturing Co., has returned from a week's fishing trip looking brown and hearty, and just as full of fun and "hustle" as ever.

—Mr. Fred Hall Jones, of the Tyer Rubber Co., is one of the new members of the New England Electric Club.

—H. O. Canfield, the genial proprietor of the Canfield Mold Works in Bridgeport, Conn., has returned from a visit to Old Point Comfort.

—Mr. Wilson, proprietor of the Hopsatonic Rubber Works, Bridgeport, Conn., has been elected one of the governors of the Seaside Club, which is the fashionable and prosperous club of that city.

—Mr. Walter G. Chase, of the Mason Regulator Co., is back from Europe and will make his home at the Nahant Club this summer.

—The average Yankee knows a little almost of every trade and profession. This was well illustrated by an experience that happened to Mr. Harry F. Knowles of the Globe Rubber Works, Boston. It seems he was down in Maine somewhere near the jumping-off place, when an accident occurred to the train he was on. Mr. Knowles had learned something about telegraphy so he was able to tap the wire and telegraph to the nearest station for help, receiving the thanks of the passengers and an invitation from the superintendent of the road to become a free passenger over it whenever he saw fit.

—Mr. George H. Barney, of the Barney Ventilating Fan Co., of Boston, is back from a week at Rangeley, where he had good fishing and a generally enjoyable time.

—Mr. Charles J. Underwood, Jr., one of the successful advertising men of New England and who is connected with the *Engineering Record*, was formerly a rubber-man in the employ of Charles M. Clapp.

—John W. Gray, a prominent man in the rubber trade of Hartford, Conn., died in that city on June 1, after having been in poor health for two years. In July, 1890, he disposed of his interest in the rubber store on Asylum street, but retained control of the Hartford Rubber Co.

—The new hospital at Malden, Mass., dedicated early this month, will cost, exclusive of furnishing, \$40,000, and of this amount the Hon. E. S. Converse, of the Boston Rubber Shoe Co., contributed \$22,000, besides the land.

—Henry Richmond, of New Brunswick, N. J., formerly a director in the New Brunswick Rubber Co., died recently in that city. He was a man of considerable wealth and very much respected in the community in which he lived.

—President Brown, of the Brown-Desnoyers Co., extensive jobbers of rubber boots and shoes in St. Louis and the Southwest, sailed for Europe on June 8.

—H. C. Corson, vice-president of the B. F. Goodrich Co., was in his early years an officer on a large Southern railway and connected closely with one of the railroad kings of the South. As time has rolled on, however, it has proved that he missed very little in choosing the rubber business for a life vocation, to which he has brought talents that have redounded to the benefit both of himself and the company of which he is an active member.

—It is reported that Mr. Ratcliffe Hicks, president of the Canfield Rubber Co., has arranged with a Meriden architect to prepare plans for remodeling the Congregational church at Tolland, Conn., the place of his birth, the same to be ready for inspection upon the return of Mr. Hicks from Europe.

—F. A. C. Perrine, formerly superintendent of the cable department at The John A. Roebling Co.'s Works, Trenton, N. J., is now connected with an electric company in Boston.

—Mr. I. W. Dodge, of the Standard Thermometer Co. has just become a member of the New England Electric Club.

—G. L. Richards, of the Boston Rubber Shoe Co., sailed for England on July 2, planning to be gone about two months.

—A. M. Stickney, of the Wellman Sole-Cutting Machine Co., was recently thrown from a carriage and so injured his hip that he will be obliged to go with a crutch for a month to come.

—Friends of C. S. Knowles, of Boston, often wonder why he lives at New Bedford, which is quite a distance from "the Hub." As soon as the heated term comes on, however, and the blue-fish begin to run, they cease asking the question and begin to envy him his delightful residence.

—J. O. Stokes, treasurer of the Home Rubber Co., Trenton, N. J., was a recent visitor to Boston, where he spent several days with the trade.

A Point on Drying Rubber.

ONE reason that so many rubber manufacturers dislike to put a ventilating fan in their drying-rooms is their belief that the fan steals all the hot air and is therefore a costly appliance. The civil engineer of the Barney Ventilating Fan Co., of Boston, made an excellent point the other day, talking with a representative of THE INDIA RUBBER WORLD. He said that the ideal drying-room should have near the floor a small scoop-blade fan. This may be speeded so as to draw out all the heavy moist air which lies near the bottom of the room, and leave the hot air above. If this is done the rubber will dry very much quicker, and instead of costing more, the fan largely reduces the cost of the drying-room.

All Going Off.

"I'VE just been discharged," said the fowling-piece, gloomily. "I'm going to strike," said the clock with decision. "I'm working too much," groaned a keg of beer in the cellar. "I'm tired, too," said the wheel on the bicycle that was standing in the corner, and the only thing in the house that seemed to be enjoying itself was the garden-hose that was playing on the lawn.—*Brooklyn Life*.

A NOVELTY in rubber appliances is the extension finger, which consists of a hard-rubber tube enclosing a number of small wires to be attached to the finger tip of the surgeon, its design being to transmit the sensations in internal operations the same as if the finger itself were in contact with the objective point.

Of all rubber articles the dam used by dentists appeals most to the taste of the outsider. To see a sheet of it shimmering in its delicate color in a slight current of air is a study. Dam weighs on an average three pounds to the yard, thirty inches wide; it is made in three weights, heavy, medium and light, and is absolutely pure. It is transparent, and of course is very elastic. Few manufacturers make it, as it is a special article requiring care and skill in its preparation.

RUBBER gloves are now used to a large extent in household work, but they have two drawbacks. In washing dishes, for instance, the grease in the water attacks them, and in a short time destroys the glove. In cleaning silver the sulphur attacks the metal, and renders the labor of no value; in fact the ware turns black. Goods cured with antimony are said to be better for household service than the ordinary vulcanized article.

Pathetic Story of a Rubber Dog.

[FROM THE NEW YORK "WORLD."]

DOG stories, like piscatorial yarns, very often need a grain or two of salt to make them palatable, but here is one which the writer can vouch for as a plain, unvarnished tale.

For over seven years there has been in the home of a family living not far from Fort Greene (Kings county) a French poodle which, having been brought to the house when a small puppy, became a great pet. Like most of her breed, this dog has more than the usual amount of canine sagacity and the tricks of Trix—for that is her name—have often entertained the friends of her owner. Recently Trix became the mother of two pups. The youngsters did not thrive, for some reason. One lived only a couple of days and the other died within a week. It was with some difficulty that the body of the latter could be taken from the mother, who guarded it jealously and made frantic efforts to regain it when it was being taken away.

Her maternal duties having thus come to an end, Trix was again given the freedom of the house, but she did not avail herself of it, as was her wont. Instead she sought seclusion under a lounge in the dining-room and rarely left her retreat. When she did venture forth it was for but a short time. Her conduct remained unexplained, except by the theory that she was mourning her loss, until yesterday. Then considerable light was thrown upon the subject. In the midst of the scuffling and scratching which had occurred at intervals and was attributed to the dog's restlessness a sound in the form of a faint but rather sharp squeak was heard proceeding from under the lounge.

An investigation was made at once. It revealed Trix crouching on the defensive, growling defiance at the investigator and holding firmly under her paws a small rubber dog that had been used as a toy by the baby of the house but had been missing for some time.

Incredible as it may appear, the poodle had taken the toy as a substitute for her dead offspring and had been cuddling it for days in her retreat under the lounge. The rubber effigy was a very good counterfeit of a young pup and an aperture caused a cross between a whistle and a squeak when pressure was applied. It was the latter that led to the discovery of the queer canine fancy.

As there was a certain amount of pathos in the dog's endeavor to fill the void caused by death, she was left undisturbed in the possession of the toy. During the afternoon the faint squeak was heard several times. Whether Trix was pressing the rubber with the idea of giving the inanimate substitute a greater semblance of life, or did it accidentally while caressing the object of her affection, is a matter of speculation. At any rate, having been bereft of her pups, she has appropriated a clever imitation of one of them and watches it with a vigilance that is rather pathetic.

A MECHANICAL rubber-goods maker estimates that the billiard-cushion people consume about 200,000 pounds of rubber annually. About ten pounds are used in each table at an average price of \$1.10 per pound.

Are They Made of Gutta-Percha?

A PROMINENT shoe paper recently published quite an interesting article on the leather trade in Glasgow, Scotland. Among other things the correspondent notes is the large business being done by one manufacturer there in the use of soles and heels which are wholly composed of Gutta-percha. These soles that were professedly Gutta-percha have been examined by experts in this country and have been pronounced to have been made of an entirely different material. There are, it is well known, compositions that contain not a particle of the genuine Gutta-percha, but yet that resemble it in many points. The old-fashioned "compo" shoe was said by many to contain Gutta-percha but was really a rubber compound. It is therefore more than likely that with the present high price of gutta, some "bastard" gum is used in connection with rubber.

The Rubber-Clothing Trade.

THE general sales-agent of the American Rubber Co.'s clothing department, Mr. S. Lewis Gillette, in speaking of the trade he represents, said:

"This season has been a remarkable one. May and June the two dullest months generally in the year, we have done better than in all of last year. Usually we depend upon the spring of the year to manufacture a stock so that we can go into the fall in good shape for the winter, but this year we are not favored that way. We have little stock now, and should the coming season be a busy one, and it looks so now, there will be trouble in supplying goods. Retailers generally wait until the last day for their goods, and the majority of them are doing so now, and it is this class that will be anxious if the demand comes that we expect. The trade is asking this season for either a high grade of mackintosh, or else they want the cheap to medium goods, the coat that is worth from four to ten dollars sells well, and then there is a jump to eighteen dollars. The demand is in a great measure from the West, the weather out there creating a call for goods, and the South is doing fairly well."

Gutta-Percha Waterproofing for Boots.

WHAT is said to be a good composition for making leather water-proof is a mixture consisting of 125 parts Gutta-percha, 25 parts glue, 16 parts isinglass, 16 parts linseed oil, 25 parts resin, 160 parts tar oil, 50 parts turpentine, and 20 parts soda.

A Comparison of Rubber Prices.

RUBBER-MEN are paying for crude gum about ten cents less on an average this year than last. One manufacturer who carefully tabulates his purchases paid 76 1-10 cents in 1891, and mentions the reduction so far for 1892 as stated. Rubber shoes are 7 1-2 per cent. lower than last year, which reduces some of the profit on the manufactured article. Clothing was about as low last year as this, mechanical goods higher, so that the rubber-man, inasmuch as he admits that he is selling more now, is in a fairly prosperous condition. He is not making a fortune, but he is keeping his family well supplied with the luxuries of the season, which for some reason are very cheap this year; for instance, strawberries at 10 cents per quart.

A Proposed Rubber-Planting Company.

A FEW points with reference to the establishment of India-rubber plantations need no further demonstration than has been afforded already by practical experimenting. Wherever rubber plants are found native, their cultivation can be made to result in more rapid growth and a heavier yield in a long term of years; besides under careful and systematic treatment of trees which are tapped their lives will be prolonged beyond any reasonable expectation of age on the part of trees growing wild and naturally exposed to reckless labor-methods. The limited amount of attention which the subject has received from those having money to invest is due first to the fact that, under the most favorable conditions, several years must elapse before any returns are possible. Then it has not become widely apparent until within a recent period that the danger is real that the native sources of India-rubber may become exhausted.

Besides the susceptibility of rubber to cultivation are to be considered the fact that, with proper living, it is possible for dwellers in the temperate zones to go near enough to the Equator to establish rubber plantations and find existence desirable, and the further fact that in most of the rubber-yielding sections the cost of land is extremely small. Finally the cost of planting and caring for rubber trees is slight, while the certainty of finding a good price for the product, when the period of yielding does come, is beyond all question.

To-day the most promising countries for experimenting in this branch of industry are, probably, Nicaragua and the Republic of Colombia. The comparative stability of their governments, as compared with some other sections, is worth consideration. It is possible that in some countries a change of government might at any time bring to the front a set of officials disposed to disregard all property-rights of a rubber-planting company. In the two sections named, also, lands can be had for paying the surveyor's fees, in localities sufficiently convenient to good transportation facilities. In another part of this journal will be found an advertisement inviting assistance in organizing a company for experimenting in the lines above pointed out, which may prove of interest to any who may wish to pay further attention to this subject.

Ivory Mines in Alaska.

A PARTY of prospectors have just reached Tacoma, Washington, after an extended trip through central Alaska. They claim that in the vicinity of the Yukon river they discovered an enormous deposit of fossil ivory. The prospectors think there is enough in sight to load a ship, and that the ground all in that vicinity is full of it. Of course the ivory lies a long distance from the market, and the question of getting the hundreds of tons to civilization is one that cannot be answered easily. The discoverers, however, are trying to organize a company to send out an expedition for this purpose.

The "Protector" Rubber Shoe.

THERE is a new article in rubbers on the market which at present I have only met with in a few of the largest composite establishments, such as Peter Robinson's and Tarn's. It is called the "Protector," and is manufactured in Paris and patented in France and abroad. It consists of a shiny rubber vamp with rubber sole extending well into the waist of the boot. Attached to the rubber vamp is a gaiter of waterproof material lined with fancy material and neatly bound, the leg extending

when worn from the seat of the heel to the top of the leg of upper. The gaiter is easily fastened with six spring clasps, similar to glove-fasteners, which are passed through eyelets. Thus a ladies' light glace boot, for instance, can be worn in wet or dirty weather quite covered with the exception of the heel, which is left free. The "Protectors" are light and not inelegant, and I am not surprised to hear, are obtaining a large sale.—"Rambler" in the London Record.

The "Chestnuts" were Sound, at Least.

SAYS our London contemporary, in damning American enterprise with faint praise:

"The results of the Consular enquiries with reference to India-rubber and its manufactures, carried out by direction of the United States Government, are being published in America. So far as the crude material and its ingathering are concerned, the information elicited seems to be somewhat of the 'chestnut' type; but there may no doubt be some utility in having it thus collected and systematized."

Rubber-Goods Exports From New York.

THE declared value of exports of "India-Rubber Goods" from the port of New York since our last report—for the four weeks ending June 28, 1892—is shown in the following table together with the total value of similar exports from the beginning of the year. It may be mentioned that exports of rubber goods from New York amount to about 53 per cent. of the total shipments of such goods from the United States.

To—	Four Weeks.	Since Jan. 1.	To—	Four Weeks.	Since Jan. 1.
Amsterdam	442	8,770	Gijon	—	8
Antwerp	—	60	Glasgow	965	1,390
Argentina	—	96	Hamburg	150	150
Barcelona	—	294	Hanover	4,918	55,120
Belfast	—	2,741	Havre	647	1,274
Berlin	1,021	2,185	Hayti	190	594
Bolivia	—	58	Hong Kong	1,416	8,439
Bolton	1,366	8,277	Japan	—	179
Brazil	450	2,694	Leipsic	—	4,823
Bremen	—	316	Liverpool	295	9,019
Bremerhaven	297	588	London	246	1,278
British Africa	515	9,817	Marselles	—	11,144
British Australia	2	103	Mexico	2,006	6,317
British E. Indies	—	136	Milan	6,817	3,082
British W. Indies	123	1,430	Moscow	—	546
Brussels	36	605	Newfoundland	70	212
Budweis	—	452	New Zealand	—	361
Central America	1,073	4,743	Nuremburg	—	1
Chemnitz	—	53	Oporto	—	758
Chili	—	1,849	Peru	67	85
China	—	64	Philippines	—	581
Christiania	—	1,159	Porto Rico	74	8,246
Colombia	353	3,012	Rotterdam	1,343	28
Constantinople	—	55	San Domingo	—	152
Copenhagen	284	2,777	Sandwich Islands	—	386
Cuba	865	9,338	St. Gall	—	165
Danish W. Indies	47	190	Uruguay	—	2,291
Dutch E. Indies	30	122	Venezuela	111	426
Dutch W. Indies	10	817	Vienna	—	610
Ecuador	25	40	Zurich	367	—
French W. Indies	—	5,165	Total	\$28,726	\$201,454
Genoa	2,587	—			

The value of crude India-rubber exported from New York during the same period of five weeks is given in the next table:

To—	Packages.	Value.	To—	Packages.	Value.
Bremen	6	\$ 1,000	London	31	\$ 2,195
Glasgow	137	2,050	Riga	70	3,507
Hamburg	148	35,175	Total	598	\$ 46,810
Havre	6	890			
Liverpool	200	2,000			

Other items of exports which may be mentioned are India-rubber scrap worth \$996 to Glasgow; India-rubber thread worth \$455 to Hamburg, and India-rubber molds worth \$750 to London.

STORAGE-BATTERIES are used to a limited extent for the purpose of operating the electric light on steam fire-engines, etc. The plates in these cases are kept apart by large hard-rubber combs; otherwise the jar would cause contact.

REVIEW OF THE RUBBER MARKET.

THE position of the rubber market is an interesting one, and is the reverse in its important phases from what it was a year ago. Then, it will be remembered, an attempt which was made to control the market resulted only in causing a great amount of rubber which had been accumulated to be thrown upon the market, breaking prices, and fairly forcing trade into a normal condition. That condition is present now, but factors which could not have been foreseen six months ago, are potently at work, and now it is idle to prognosticate the course of prices for the next few weeks. Then the visible was the factor, and it was a known one; now it is the invisible, and it is intensely speculative because it is so vague. Consumption has been very large, and is so now, and stocks in sight are dwindling rapidly. No one can tell how much the manufacturers have; individually they possess little information themselves, and so the subject is a vague one to discuss. Analogous reasoning would indicate that they are holding much more than they did a year ago, else prices would hardly jog along as they are now doing. Then they were banded by a common impulse, to buy as little as possible and economize in the use of every ounce, which policy safely tided them over the obstacles which for a while seemed insurmountable.

The world's visible supply of Pará rubber on June 30, 1892, compared with that of June 30, 1891, was as follows:

	June 30, 1891.	June 30, 1892.
United States.....	1,472 tons.	479 tons.
England.....	1,709 tons.	817 tons.
Pará.....	605 tons.	210 tons.
Afloat.....	353 tons.	150 tons.
Total.....	4,137 tons.	1,656 tons.

The supply is thus seen to be 62 per cent. less than a year ago. During June there was a reduction in stocks in the United States of 136 tons and in England of 223 tons. At Pará the stocks are nearly identical and afloat of 178 tons. There is a notable decrease in the stocks in the United States of Central, Caucho and Coarse, as follows:

	June 30, 1891.	June 30, 1892.
Central, }	1,015,000 pounds.	280,000 pounds.
Caucho, }	454,000 pounds.	90,000 pounds.
Coarse.....	860,000 pounds.	280,000 pounds.

This is not quite a fortnight's supply. In Europe the comparison is not so marked, but sufficient to be interesting, and is as follows:

	July 1, 1891.	July 1, 1892.
Coarse.....	860,000 pounds.	280,000 pounds.

The stocks of Caucho in the world's visible supply July 1, 1892, were as follows:

	United States.....	England.....	Pará.....	Afloat.....	Total.....
	109 tons.	30 tons.	50 tons.	90 tons.	279 tons.

The receipts at New York during the past month were as follows:

	Pará.	Caucho.
June 15—By the <i>Cearense</i>	186,000 pounds.	4,000 pounds.
June 20—By the <i>Origen</i>	99,000 pounds.	300 pounds.
June 23—By the <i>Ambrosia</i>	333,000 pounds.	83,000 pounds.
July 2—By the <i>Lisbonense</i>	42,000 pounds.	116,000 pounds.
July 5—By the <i>Vigilancia</i>	12,000 pounds.	50,000 pounds.
July 7—By the <i>Martha</i>	255,000 pounds.
Total.....	927,000 pounds.	253,300 pounds.

The arrival of Centrals during June were 223,000 pounds, an increase of about 50,000 pounds when compared with the receipts in May.

Cables from Pará quote Islands at 5100 reis, and 5300 for Upriver, Coarse at 3050 @ 3300 reis. Receipts so far at Pará this month are 130 tons. Exchange 10½d.

Afloat on the ocean are 140 tons by the *Gregory* and 47 tons by the *Basil*; also 80 tons by the *Basil*.

Cable quotations in London are for fine Pará 2s. 6d.

Large supplies of Pará rubber cannot be had in the United States before October, and until then variations in stocks will be watched with interest. Comparative statistics are very treacherous when an attempt is made to justify prices by them, but in 1882 a less acute position prevailed, and rubber "cornered" itself, the price advancing to \$1.27, when great activity prevailed.

The business during the past thirty days has been very good; prices, however, not being much if any higher. At this season there is usually an active demand for fine old Pará which now is naturally becoming scarce. Centrals are firm, and Africans are in small supply with a good demand.

The statistical position of Pará rubber in New York is thus reported for June, 1892, as compared with the same month in preceding years:

	May 31,	about	1,400,000 pounds.
Stock of Pará here	June	"	1,032,000 pounds.
Receipts	June	"	1,432,000 pounds.
Deliveries	June	"	1,000,000 pounds.
Stock	June 30, 1892,	"	3,300,000 pounds.
Stock	June 30, 1891,	"	700,000 pounds.
Stock	June 30, 1890,	"	700,000 pounds.

Prices for June.

	1892.		1891.		1890.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First..	68	46	87	57	91	67
Highest..	69	47	87	57	92	68
Lowest...	68	46	81	52	91	66
Last....	68	46	81	52	91	68

The latest New York quotations are:

Pará, fine, new.....	68-70	Sierra Leone.....	25-42
Pará, fine, old.....	71-73	Benguela.....	45-46
Pará, coarse, new.....	45-51	Congo Ball.....	37-48
Pará, coarse, old.....	48-52	Small Ball.....	35-39
Caucho (Peruvian) strip.....	46-47	Flake, Lump and Ord.....	25-28
Caucho (Peruvian) ball.....	52-53	Mozambique, red ball.....	25-28
Mangabeira, sheet.....	40-42	Mozambique, white ball.....	55-56
Esmeralda, sausage.....	51-52	Madagascar, pinky.....	40-42
Guayaquil, strip.....	46-49	Madagascar, black.....	28-43
Nicaragua, scrap.....	49-50	Borneo.....	175
Guatemala, sheet.....	47-48	Gutta-percha, fine grade.....	118
Thimbles.....	41-45	Gutta-percha, medium.....	118
Tongues.....	40	Gutta-percha, hard white.....	118
	34-38	Gutta-percha, lower sorts.....	nominal

In regard to the financial situation Messrs. Simpson & Beers, brokers in crude India-rubber and commercial paper, New York, report:

"During June prime rubber paper was sold readily at 4 and 5 per cent. only (we may say) exceptionally strong, two-name paper going at the former rate. Although some \$20,000,000 in gold have been exported since last report, rates for money and paper have as yet been unaffected, but should the gold exports be continued on the same scale through July, rates no doubt will advance. At present our market is about bare of rubber paper; we quote first class names, say four to six months to run, at 4½ to 5 per cent."

RUBBER-GOODS TRADE.

BUSINESS during the past month has been very good for the season. This is not only true of rubber, but of a great many other lines, and has encouraged a very hopeful feeling. While the financier is worrying over the ever-present silver bill and the laborers at Homestead playing every shade of confusion in the laws of political economy, the average citizen has "caught on to" more or less of his share of the money which has flowed out of the United States Treasury, and from other sources, and is spending it very freely for his wants, real and imaginary. Whatever may follow, times are now good, and the wide-awake merchant is reaping the advantage.

In rubber boots and shoes the trade has been excellent, but there are now unmistakable signs that the tennis-goods business has passed its zenith, and that very probably the larger profits from it will not come again, though the tennis-shoe will permanently have its proper sphere. It is a noiseless shoe, an excellent one for the field, the yacht, and everywhere that it is damp, but to be worn under all circumstances as a "fad" it has lost its hold. The shoe made of Russia leather has displaced it on the paved walk and other ideas have attacked it in other directions. Even for yachting a rubber sole is now pasted on to the bottom of the leather shoe with more satisfactory results, and it would not be strange, in a season or two, if the Brockton and Lynn people were in the market for rubber soles the same as the city man is now for his tires, and the business of the tennis-shoe, as a finished and complete article, should depart entirely from the rubber boot-and-shoe manufacturer. At least now the trade is overdone. The East got fully supplied, and then the West came along, and the season was made this year from the extreme sections of the country. Sales one year ago at this time were very large; now they are small, or nothing, and every maker is going back to rubbers, and a week or two longer will wind up the season entirely.

The rubber-shoe business is very fair, and details are being made freely. Western jobbers are taking advantage of low rates of freight to bring their goods forward. In new orders there is a disposition to go slow, jobbers studying styles more than ever, and trying to decide what will be popular in the retail trade this season. Stocks are not heavy in any section, and there is only one hope expressed in the trade—that there will be as much snow next winter as there has been rain during the past spring and the present summer. The future of the rubber market is sometimes given a serious thought, as dealers very much dislike to jeopardize the trade as expressed now in its large volume by the necessity of advancing prices, but as the problem of prices cannot be solved, importers having a good share of bears in their number, the trade is looking upon this question in a philosophical way, and letting the future take care of itself. The mills are doing more or less shutting down, as is usual for repairs and to obviate the uncertainties of vulcanization in hot weather.

In mechanical goods the demand for garden-hose is becoming unsatisfactory. Country dealers bought quite heavily in the early part of the season, the rains came, and stocks became a burden, and new orders are scarce. Most of the dealers in summing up results now say the season has been a medium one, not fulfilling the hopes of three months ago. In belting a large trade has been done with corporations, and the same can be said of packing-gaskets, diaphragms and everything used about machinery. The demand for belting from threshing-machines is greater this year than ever before. Railroads are still making large contracts for air-brake hose, and in steam-hose there is a good outlook for the coming season. In fire-hose the season has been a good one. In matting dealers say the orders are excellent. In jar-rings the fruit season is not of the proportions

of the last, but stocks have worked out of first hands and prices now are six-cents higher for "compos" and relatively the same for "pure" than in the early part of the season. The demand for gas-tubing continues as also it does for surgical use. The prices for good mechanical supplies are well maintained, those manufacturers who catered to the best trade being satisfied that the advance they made was justified by the results. Rubber is ten cents higher than it was a year ago, and quality had to give, or prices advance, or losses result. The trade is in a very healthy condition.

In clothing the outlook is excellent; manufacturers of cloth for a number of weeks have believed that this branch was on rising ground and that we were approaching a season that happens along once every four or five years, and which will be marked in its results. All sorts of styles and fabrics have been made, and the requirements of a class of people who are less favored in a stock of surplus cash have been studied, a policy in itself calculated to add very materially to the volume of trade. Of course the season has been a good one, because it has been very wet. A new season is now on the point of commencing, and there have been a good many buyers in New York already. The principal business is in medium and cheap goods, ranging in price from \$4 to \$9. Then the staple lines of goods are going off well, the call being for rubber-surfaced goods with a dull luster, and with fancy backs. Mail orders are plentiful, and travelers are preparing for a busy campaign in every section and will be on the road by August.

In hard-rubber goods business is of good volume for the season, and manufacturers are well satisfied. In druggists' sundries there is as usual at this season a falling off in the demand, and the business is without peculiar significance.

In manufacturers' requirements, litharge is steady with a moderate business. Oxide of zinc is in slight demand, with free deliveries on contracts. Whiting is also firm at old prices with a good demand. Barytes is quiet. Linseed-oil is strong with a tendency to advance. Sulphur remains very steady. Spirits turpentine is in good supply.

A PECULIARITY of the clothing business is the sale of mackintoshes by peddlers on the street, who visit offices and industriously ply their trade. The best makes are being sold in this manner, and very cheaply, as the vender is at very little expense. His chief difficulty is to hunt a customer, but when he strikes a race-course in an April shower with a nice well-lined rain-coat which he can sell for \$3.75, he generally can distance the umbrella-man in a slow canter.

JAR-RINGS should never be used the second season. The "life" of rubber especially, as it is in the ordinary ring, disappears rather quickly, and when that is the case, its air-tight qualities on the jar are no better than a hundred substances which could be named.

THE winding of a spiral wire around hose, either inside or outside, has been duplicated to some extent in bicycle-tires, but with indifferent results. The difficulty has been to prevent the wire under pressure from cutting through the rubber. A better use has been made of it in making friction surfaces for fast-running wheels in dynamos, the outer wire acting fairly well as a cog, meshing into its fellow evenly, and thus obviating the great noise incident to high-speed machinery. Experiments are being carried on in this direction in certain quarters, and it is believed that the result will prove satisfactory.

Insurance of Rubber Factories.

THE Rubber Manufacturers' Mutual Insurance Co., of Boston, commenced business on February 15, 1885. The stock rate of insurance at that time was from 2 to 5 per cent. To-day the company will write the same property for $\frac{1}{2}$ to 1 per cent. The secretary of the company has supplied THE INDIA RUBBER WORLD with a financial statement of the company, for the year ending January 1, 1892, of which an abstract is given below:

Amount at risk.....	\$11,777,488.00
Gain in 1891.....	1,976,131.00
Premiums and Interest received.....	139,582.98
<i>Assets:</i>	
Bonds, Endorsed Notes and Cash.....	\$148,389.65
<i>Liabilities:</i>	
Losses adjusted not due.....	\$297.46
Net Cash.....	\$148,092.19
Obligation Premiums.....	648,915.05
Total Security of the Company.....	\$797,007.24

Paid losses during the year.....	\$51,574.19
Dividends paid.....	66,707.21
Average Dividend for 1891.....	.65 3-10 per cent.

Mutual insurance is becoming very popular with rubber manufacturers, and nearly all the mills built upon the specifications required by mutual companies are now insured by this plan.

A NEW outlet for thick rubber matting has appeared in the city riding-schools. As the horses are unshod something is needed to keep them from slipping, and rubber has been found to answer this purpose best. A matting half an inch thick is therefore put on the floor and lightly covered with tan-bark, which makes a beautiful track for horseback riding.

RUBBER CULTURE.

The advertiser, who is thoroughly familiar with the subject, wishes to negotiate with responsible parties in regard to cultivating India Rubber on a large scale. He will secure concessions, clear the ground, plant trees and cultivate them to maturity for a portion of the stock or bonds of a proposed company for cultivating rubber for the New York market.

Enormous profits are guaranteed, but it is necessary to have men of undoubted financial standing at head of the enterprise.

A No. 1 reference given.

Address,

H. M. GRIFFING,

"India Rubber World."

New York City.

See notice elsewhere
in this number.

THE CHELSEA WIRE FABRIC RUBBER CO.

THOMAS MARTIN, PRES.

WE MAKE

ALFRED W. FITZ, TREAS. AND MANAGER.

Mechanical Rubber Goods

OF THE BEST QUALITY ONLY.

WE FURNISH

RUBBER BELTING AND HOSE

EITHER WITH OR WITHOUT THE INTERWOVEN WIRE.

Our Wire Fabric Rubber Hose stands **DOUBLE** the pressure and wears longer than any other Hose made.

Our Wire Fabric Rubber Belt, has less stretch, is stronger and will outlast any Belt to-day on the market.

WE GUARANTEE ALL OF OUR GOODS.

Office and Factory:

968 TO 974 BROADWAY,
CHELSEA, MASS., U. S. A.

Mention the India Rubber World when you write.



Wire Fabric, the dark lines show the interwoven wire.

AN illustration of how little inventions sometimes pay big profits is to be found in the history of the patent rubber beer-stopper. It is said that the inventor and proprietor of this article has actually made millions of dollars out of it.

A WOMAN at Plainfield, N. J., claims that she can deodorize rubber by dipping it into a solution of salicylic acid and alcohol, preferably in the proportion of twenty grains of salicylic to half a pint of alcohol.

SOMETIME ago in THE INDIA RUBBER WORLD a description appeared of probably what is the largest "biscuit" of rubber ever made on the Amazon, and which is now in the possession of the Gutta-Percha and Rubber Co. Ambition having apparently been exhausted in that direction, Sinclair & Co., also of New York, report that they have now obtained the smallest biscuit ever made in that region. It weighs only two ounces, is shaped more in the bottle, or rather small-flask, form than larger samples, is about two inches long, and an inch in its smaller diameter. The "baby biscuit" is a curiosity, the only drawback to it being that it cannot grow and put ducats into the pocket of its enterprising owner.

MISS GALE, from Chicago—I want to get a pair of rubbers. Salesman—For yourself?

Miss Gale—Yes.

Salesman—Well, I don't think we have anything in overshoes that will do. But I think we might suit you with a pair of mackintoshes.—*Boston Courier.*

RUBBER goes into everything. The latest fad is to put a couple of rubber comb-teeth into a cigar and give it to a friend, or better still to an enemy. The aroma is indescribable. Try it.

THE tests of the Massachusetts Electrical Engineering Co. would seem to prove that only the best and most carefully prepared rubber compound will make a good and lasting insulation. These tests have been mainly in the interest of A. C. Eddy of the National India-Rubber Co., and have been borne in mind in the preparation of the wire made for that company, which is made of pure Pará and Lake copper. The rubber covering is first pressed around the wire in a semi-plastic form, making a seamless covering, an advantage over the use of a seam. It is then wound with a rubber tape and covered with a braided weatherproof outer envelope. These wires are largely used in the New York city subways.

To Manufacturers of Rubber Boots & Shoes.

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INSULATED-WIRE TESTING IN THE FACTORY.

By Herbert Laws Webb.

SYSTEMATIC testing of the product of the insulated wire factory is a refinement of comparatively recent growth in this country. Indeed it is by no means to be taken for granted that even now systematic and rigorous tests are the rule in all of the factories that profess to turn out high grade insulated wire. Most of them, however, have had to institute tests of some sort, partly because their customers have themselves acquired the habit of making tests and insisting on securing the conditions guaranteed, and partly because competition has become so severe in the wire business that the necessity of some check on the finished product has impressed itself on the manufacturer who wishes to keep in the front rank. In other factories, to the credit of their directors be it said, careful attention has always been paid to this important detail, and well-equipped electrical laboratories or testing-rooms have been established, under the supervision of capable electricians. In this department careful tests are made on every coil of wire turned out by the factory; complete records of the tests are made, and no coil that does not come up to the proper standard of insulation is passed for shipment. Defective coils are rejected, and by subsequent tests the "faults" are traced out; the leaky portion is then removed and the coil made perfect by means of a joint, which is the work of a skilled operative, and gives as high an insulation as a similar length of machine-covered wire.

The accepted model of the testing-room of an insulated wire factory is the same department of one of the great submarine cable works. Submarine cables are subjected to the most minute and searching tests at every step of their manufacture. The specifications to which they are made are most rigidly drawn up and must be complied with to the last figure of a row of decimals. Tests are made on the core as it is first turned out by the covering-machine in short lengths of one or two miles; further tests are made on the joints that are put in when the lengths are joined together; a continuous test is kept on the core as it is passing through the process of sheathing, and still another set of tests is made on the finished cable when it is coiled down under water in the large store tanks. All these tests are made not only by the factory electrical staff but are supervised, checked and recorded by the engineers to the company or government for which the cable is to be laid, so that no irregularity can possibly escape notice. The result of all this scrupulous care and watchfulness is that many thousands of miles of cable are shipped in absolutely perfect condition, sent on long voyages and laid down in deep water without the appearance of a single fault or defect.

The testing-room of a submarine cable factory is replete with accurate measuring instruments of every kind, and generally contains several complete sets, so that work can

be carried on by more than one observer at a time. The measurements made are to determine the insulation resistance, the conductor resistance and the inductive capacity of the cable, and all measurements are made at a certain definite temperature—75 degrees Fahrenheit. For this purpose the core or cable is immersed in the tanks containing water kept constantly at that temperature, and the wire is allowed to remain in the water for two or three days before making the tests in order that the temperature may be equal throughout. For cables to be used on land the standard temperature generally taken for factory tests is 60 degrees Fahrenheit. By the record of these factory tests at standard temperature the after behavior of the cable can be checked. The resistance of every insulating material varies with its temperature, increasing for lower and decreasing for higher temperatures; insulating materials, or non-conductors, act in this respect in an exactly opposite manner to conductors, whose resistance increases for a rise of temperature and decreases for a fall. Correction tables have been worked out for the standard insulating materials by means of which the observed insulation resistance of a cable at any temperature may be reduced to the standard temperature of 75 or 60 degrees, and in this manner it may be seen whether the intrinsic insulation of the cable has improved or deteriorated.

The methods of testing generally followed in the insulated wire factory, of course, do not approach in refinement and thoroughness those of the submarine cable works, nor is it necessary in all cases that they should. It is, however, a highly necessary precaution to make a careful insulation test on every foot of high grade wire that the factory turns out, and it is just as much to the interest of the manufacturer as it is to that of his customers to do this. In no other way can an efficient check be kept on the work of the factory, the proper execution of the various processes, the non-variation of the compound and the condition of the finished wire after all the handling that it is subject to in the several stages of manufacture. Such a test, if it is worth making at all, is worth making well and systematically. The wire should be immersed in water tanks and the temperature of the water should be maintained constant. At least twenty-four hours, and even twice that time if the coil contains a great length of wire, should be allowed to elapse between the time of immersion and the time of making the test in order to allow of the entire length of wire attaining the temperature of the water. Careful records should be made of all tests in a book ruled and arranged for the purpose. These records extending over any length of time will provide a clear index of the quality of the wire turned out.

These tests are only necessary, or indeed possible, with high grade rubber covered wire. In the case of the weatherproof underwriter's and all similar classes of the

so-called insulated wire testing of any sort is totally out of the question. The insulation of this kind of covered wire is guaranteed and that is all that need be said about it. No single variety that has ever come under my observation, and I have tested a good many, although perhaps not all that are on the market, will stand a test under water. Most of them show practically no insulation at all even a few minutes after being placed in the water and a few hours' immersion of even the best is sufficient to show that the title of weatherproof or waterproof is entirely a misnomer. Of course it is understood that such wire is not expected to stand a test; it is only used because it is cheap, and even that recommendation has not now the weight that it formerly had because most electrical companies have found out that it pays better in the end to use good material and keep their circuits in good condition.

The outfit of testing apparatus required in the average insulated wire factory need not be very complicated nor very expensive. Every instrument, however, should be the best of its kind as apparatus of inferior make is liable after a short period of use to numerous vexatious defects which waste the time of the observer, ruin his temper and verbal morality and militate against the accuracy of his measurements. For regular tests of insulation and conductor resistance the instruments required are a reflecting galvanometer with scale and shunt, a Wheatstone bridge, a set of high resistance coils, a battery reversing key and a short circuit key and a battery of not less than 100 volts but better still of 300 or even 500 volts. (Factory tests for insulation should always be made with the highest pressure available, as small defects in the core are more likely to be revealed.) The instruments should be of the best quality obtainable, and it may be mentioned that so much progress has been made during recent years in the manufacture of fine testing instruments in this country that no difficulty can be met with in buying entirely trustworthy apparatus; they should be set up and tried by a competent expert. The work is of such a routine character and offers so few difficulties so long as the instruments are good and kept in good order that almost any young man with a steady hand and eye and a fair knowledge of electricity can carry out the ordinary tests after a short period of instruction. Careful instruction by an expert who has supervised the setting up and arrangement of the instruments is a preliminary that should certainly not be dispensed with if it be desired to entrust the regular testing to a man who has not had good training in the use of delicate instruments. A very slight "trouble," such as a fault in the insulation of the battery or leads, a bad contact in one of the keys, or a loose connection will be sufficient to confuse the tyro, completely rendering his tests useless if he does not understand the cause of the irregularity of his results, and in any case wasting his time if he does not know the quickest way to trace out and remedy the defect. A set of testing instruments of poor quality, badly set up and taken care of and left in the hands of an untrained man, would be worse than useless—about as valuable a combination as a badly regulated chronometer in the care of an inexperienced navigator.

The testing-room should be located as near to the water

tanks as possible, but should be far removed from any machinery. It should be a separate room devoted exclusively to the purpose for which it is equipped, should be kept dry and clean, and should not be accessible to any one except the man in charge of the testing work. A brick or masonry pillar should be provided as a pedestal for the galvanometer, otherwise it is almost impossible to get rid of all vibration due to the machinery. The leads running from the testing-room to the water-tanks for connecting on to the coils should be of the best quality of insulated wire obtainable; it is impossible to make accurate tests on short lengths of wire if there is any appreciable leakage from the leads.

It is customary now in some factories to test cables intended for use on "high-tension" circuits with a pressure equal to about double that which the wire is likely to be subjected to in actual work. An alternating current dynamo which can be run up to several thousand volts is generally provided for this work. This practice is a very good one, and, indeed, a very necessary one, as the insulation measurements are made with a comparatively low pressure, generally not more than 200 volts. While these measurements give a good indication of the quality of the material, and would reveal any serious defects, they do not prove that the insulation will withstand the strain of a pressure of two or three thousand volts. The dynamo test is a very severe one, purposely made so in order to betray any weak places that might break down in the course of regular work.

For telegraph and telephone cables made to a rigid specification governing all the electrical conditions of the wire the tests must be very complete, and be carried out with great care and accuracy. Where this work is done a standard condenser and a discharge key must be added to the outfit before described, in order to allow of measurements of inductive capacity being made.

The defects that occur in rubber-covered insulated wire are generally due to careless or over-much handling during the processes of manufacture, and to the introduction of particles of foreign matter in the insulating material while it is in a plastic state. Other sources of trouble are to be looked for in imperfect adhesion between wire and covering and between the different coatings of the covering, and to variations in the quality of the compounds and rubber. Every defective piece of wire cut out should be carefully examined with a view to placing the responsibility for the trouble, if possible, or, at any rate, of discovering the cause and remedying it. Only by systematic testing can a proper check be kept on the product of the insulated wire factory.

THE quality of rubber is affected often by carelessness in collecting the milk. When too many incisions are made, and the milk allowed to run too freely down the trunk of a tree to the ground, it is gathered up mixed with dirt and rubbish, then rolled into balls, and a layer of clean milk worked over it, whence it is ready to be worked off on some purchaser as rubber of a superior quality. This method is reported from the Brazilian State of Minas, whence large amounts of mangabeira rubber come.

SOME FAULTS OF FIRE-HOSE.

From the Fireman's Standpoint.

THE principal faults that firemen find in hose are cheapness of construction, and consequent unreliability, and weight. There is a remedy for the former, but probably not for the latter without creating the former. If only the best hose it is possible to make will be used, the firemen will not complain as to its weight, providing of course it is not heavier than that now made.

If hose was purchased by firemen as well as all fire-service equipments, none but the very best would be purchased, regardless of cost as long as it was reasonable, and hose manufacturers in particular would either have to manufacture better hose than much of that which is now made, or go out of the business altogether.

Firemen appreciate as no one else can the importance of having none but the best and most reliable of appliances to work with. The bursting of a length of hose, or the breaking of a piece of machinery which would stop the water at a critical moment, might not only cause the loss of property but of lives as well. The fireman's own safety often depends upon having water which a burst in hose or other accident might deprive him of, and as his life frequently depends upon the appliances he uses, he wants none but the best for his own safety if nothing more. It is seldom that any other accident happens to fire service equipments when on duty than the bursting of hose, consequently the firemen fear that more than anything else; and it is not strange that reliability such as only the best of hose can give is what firemen most desire.

Cheap unreliable hose probably owes its existence to the incompetent men who have been selected by cities and towns to purchase it. Fire commissioners and committees who owe their appointments to politics, and know but little or nothing of fire hose and its merits or demerits, too often select the cheapest hose offered them simply because it is cheap, some of which would be dear at any price. To meet this class of purchasers a cheap grade of hose has to be made, and by strong competition in the trade it is constantly growing worse instead of better, much to the regret of the firemen who use it.

Some cities have an ordinance which compels the purchase of all goods by contract to be awarded to the lowest bidder, which is always a costly proceeding, and the place which has such an ordinance pays considerably more in

the end for poor goods than does the city that buys the best regardless of price.

Cheap hose is always the dearest. For every dollar saved in its purchase, it will cost two in the end. This is not only true in hose, but in all fire service equipments. When life and property is at stake it is a crime to consider the cost in providing means for its prevention. The best is none too good for fire department apparatus and equipments. There is too much at risk to take any chances with cheap goods.

The best of rubber hose or rubber lined fabric hose is all that firemen will indorse. Rubber hose in Northern States, where the winters are severe, is preferred, because it is easier handled, and can in the coldest of weather be taken from the frozen slush and ice in the street and placed on the reel or in the hose wagon and is ready for immediate duty. No other hose can free itself from ice as can rubber, no other hose requires so little care, and requires so little work to handle it in making up after a fire and putting it in proper condition to use again. It saves firemen hours of extra service, which they appreciate, especially in call force fire departments, where other duties have a prior claim on them, after the fire is extinguished. Companies with no facilities to care for hose can use no other than rubber hose to advantage.

In small places it is the cheapest because only one-half as much is actually needed as of hose that requires charging every time it is used. One reel full is sufficient for ordinary duty. Hose that contracts or expands under pressure firemen severely condemn. Elongation of hose is no detriment except so far as it influences the rubber lining. From a duty point of view firemen have no fault to find with hose because it stretches.

In engine contests or trials of fire engines for a distance record, firemen will use none other than rubber hose when it is possible to get it. Its glass-like, smooth interior surface reduces in large degree the friction of all other hose. Its freedom from stretching is also of great value in fancy stream playing.

Could firemen have their say a large majority of the hose used would be the very best of rubber. I hesitate not to say that rubber hose is the coming hose.

H. H. E.

THE RUBBER HAT-BAG INDUSTRY.

By I. A. Sherman.

THE manufacturers of straw and other hats have adopted for a long time the use of the rubber hat-bag in forming the shape of this piece of head-covering. In speaking of other hats than straw its use is not so extensive, being limited to a few qualities of felt, but in the straw braid it now is fairly indispensable. It

does not altogether fill the bill, however, and its points of unreliability will be noted.

The rubber hat-bag is shaped very much like a hat, the crown being more conical and the rim as broad as the Mexican sombrero. The schedule of measurements given by one manufacturer will allow an idea to be formed of

their dimensions. In his particular bags the diameter of the crown at the base on the outside is $6\frac{1}{4}$ inches, and at the top 4 to $4\frac{1}{2}$ inches, with a height of four, five or six inches. The rim is from $20\frac{1}{2}$ to 26 inches wide, and $\frac{3}{8}$ or $\frac{1}{2}$ inch thick. The crowns are sometimes made oblong, and again nearly square. It has a peculiar look, but, closely examined, it is a triumph of workmanship. Made of the purest and finest Para, it is very flexible and yielding notwithstanding its thickness, three times that of some mats, or equal to a four-ply packing. It has a very smooth finish, and it brings \$2.25 per pound, and when it is considered that these articles range from $3\frac{1}{2}$ to $5\frac{1}{2}$ pounds in weight each, an idea can be formed of the expense of keeping a factory supplied with them.

The mode of their use varies. Each factory has its manner of using them, and as a rule it is a secret of the workshop. Broadly speaking the wooden hat-block rests in a strong frame, the straw is riveted to the rubber bag at the edge of the rim, and then a hydraulic press comes down on to the inverted hat-bag which is filled with water, with a force of nine hundred pounds. The water evenly fills out the rubber hat-bag and its shape is communicated to the straw braid, one hat after another passing through this process as rapidly as they can be fastened and pressed.

Straw men, however, vary largely in some steps in the method. Some use hot steam, others cold water, and



others heat the press. Some place a piece of sole leather between the bag and the straw, the idea being that the gum is too yielding and allows the straw to bury itself in the rubber. This is a logical conclusion, an illustration of it being found in the billiard cushion, which must have a wire or some rigid surface at point of contact to prevent the elasticity of the gum doing the opposite of what was intended. Another class of manufacturers use unvulcanized bags, on the theory that the heat of the steam will perform the work of vulcanization. One method is good for a certain class of work, and a second for a different, and so the theories of the different manufacturers cannot be safely criticised.

Some braids are finer than others and the finish must be nicely done, and in that case greater care and finer implements must be used. In cheaper straws less care needs to be used, and the bag may be inferior so far as the efficaciousness of the method at the moment is concerned. Unvulcanized rubber bags are used for felt hats.

Indispensable as the rubber hat-bag is considered to be by the largest straw manufacturers there is a vague idea that it will be some day greatly improved or else superseded. In the first place it is expensive, and capital is consumed at a rapid rate in the outfit. Each manufacturer buys as few as possible, but it can readily be seen that too much economy in this direction would interfere with the rapid handling of labor. The process of riveting

the rim to the rubber is a slow one comparatively, and considering the great number of hats that have to be made in a factory it is not speedy enough. Then the wear and tear of the bag is a discouraging factor. A bag often goes to pieces the first time it is put in the press, while some last a month. The reasons for this are manifold. Steam, when used, is very destructive to rubber, and the bag often gets over vulcanized. The cement at the junction of the crown and rim is sometimes faulty, and the bag gives out at that point. The rivets tear the rim to pieces if care is not used. The circumferential rim on the press will destroy the edge of the bag if care is not used. Then workmen are ignorant of the constituents of rubber, and will neglect the care of the bag when not in use, or put it to uses for which it was not intended.

In the unvulcanized bags they will become overcured and rotten, falling to pieces. Some manufacturers line the costly bags with the unvulcanized, which is claimed to be an advantage. The vulcanized bag is thus protected by one which costs one-quarter as much and the unvulcanized gradually becomes vulcanized where steam is used. Unvulcanized rubber is used also for patching, manufacturers undertaking to repair their bags which they do with more or less success.

The rubber hat-bag industry is not a large one. Few companies care to have anything to do with it, as it is a specialty in which great care and skill have to be exercised with, after all, variable results. Peculiar as it may seem, many rubber men never heard of the rubber bag. A leading manufacturer the other day confessed his ignorance of the subject except that he had thought they were the covers used by coachmen for their hats in rainy weather. In another place a dozen salesmen guessed at what they might be like, the subject being entirely new. One of the largest concerns in the country made a few, and did well with them, so far as a good article was concerned, but they quickly abandoned the business after the first batch. It is an article which ought to receive the attention of the inventor, for if it could be improved, the principle could be applied to many other manufactures than that of the straw-hat industry.

A Rubber-Mill in South America.

THE initial rubber-mill in Colombia is now being erected at Bogota, and it will be used for making rubber cloth, ornamental articles and other goods. Bogota is situated several thousand feet above the level of the sea. Consequently it has a temperate climate, and vulcanization can probably be pursued there without difficulty. It is near the source of the Rio Negro, a tributary of the Amazon, also near the Guayaire, which empties into the Orinoco. Still the short distances which intervene between it and these rivers are almost insurmountable in difficulties of transportation, and the new mill will probably draw its supply up the Magdalena, using therefore Centrals. The skilled-labor question will probably be a problem for the Bogota proprietors to solve, otherwise the enterprise ought to do well.

NEW GOODS IN THE MARKET.

THAT practical and irrepressible inventor of toilet articles in rubber, Mr. C. J. Bailey, gives to the trade this month another new invention—a neatly-molded receptacle for holding toilet soap. In form it is an oval dish of black or maroon rubber, the bottom being studded with numberless little points of rubber. The design of the points is to keep the soap from wasting, as it does not lie in the water that results



from its own drainage, but dries immediately. The dish is non-breakable when brought into contact with other toilet articles and cannot possibly chip or crack them. It can also be cleansed instantly with water and will last a lifetime. Having, therefore, the advantages of cleanliness and economy, it will be found a most valuable adjunct to the toilet. Although but newly brought out, large orders have already been booked for this soap-dish and the firm are making preparations for marketing it the world over. It will be sent postpaid to any address for 35 cents. Dealers and those interested are invited to send for circulars and further information. Manufactured by C. J. Bailey, No. 22 Boylston street, Boston.

The Millard No. 5 Atomizer.

THERE are to-day so many styles of atomizers and they are used for such radically different purposes, that the novelty of merit in one is something of a rarity. The accompanying illustration, however, shows one manufactured by a Providence house that has many points of excellence that should make it a very popular article. These atomizers are made for toilet and



medical operations, and while it is extremely simple it produces an exceedingly satisfactory spray. It is almost impossible to get it out of order and it is this latter point that users of atomizers will appreciate. One reason that this is so durable is that the inner tube runs nearly through the outer tube and is securely fastened at the end. It matters little, therefore, how much both tubes are bent, as it is almost impossible to displace the adjust-

ment, and the spray therefore remains the same. These are made with metal tubes only. The bulb and rubber tube are made of a fine quality of white rubber and according to the wish of the user it may be fitted either with a single or double bulb. This atomizer, which is known as the "Millard No. 5," is manufactured by the Millard Manufacturing Co., Sprague street, Providence, R. I.

An Automatic Feeding and Closing Inkstand.

A NEW invention in inkstands for general use is illustrated herewith, the special point about it being the automatic closing and the automatic feeding. When the pen is dipped into the ink it strikes a rubber ball or float which prevents the pen from going so deep as to take up too much ink. When the pen is withdrawn the ball immediately rises, closing the orifice and



preventing evaporation. There are therefore two distinct advantages to this—you can dip your pen as carelessly as you please, and you are not obliged to stop and cork or cover the inkwell. It is always ready and always air-tight. The ink remaining always fluid does not dry into a gummy cake, as occurs in many inkstands, and there is no danger of spattering or spilling. These goods are manufactured by the patentee, Mr. W. E. Lewis, Corry, Pa.

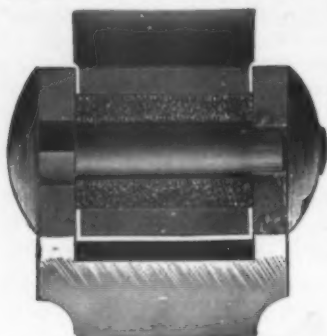
Red Cross Cementing Outfit.

AN exceedingly neat arrangement that every bicyclist will appreciate is shown in the accompanying illustration. It is a neat metal box which when shut, is so compact that it will slip into the pocket as easily as the ordinary match-box, and when open shows a complete cementing outfit that is of the greatest use in case of accident to a wheelman's tire. The case contains two tubes of rubber cement, a sheet of rubber patching-cloth, a sheet of emery cloth and a sheet of fabric frictioned with rubber. Already this article is receiving the indorsement of a great many wheelmen, and it will undoubtedly soon be in use by a majority of the bicyclists the country over. Manufactured by A. U. Betts & Co., Toledo, Ohio.



Rubber Open-Heads in Carriage-Springs.

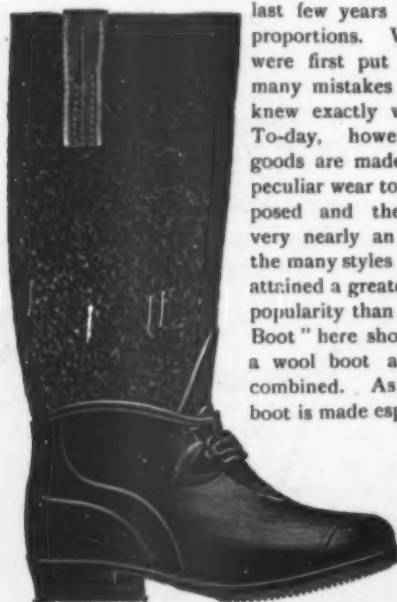
THE advantage of rubber placed under machinery to prevent jarring and vibration has long been recognized, but it is only recently that it has been used for vehicles. In Europe—notably in Great Britain, France and Belgium—rubber is used as a cushion for the axles of vehicles and has made carriages much more easy to ride in. To this end in each hub is securely embedded an elastic rubber cushion which supports the whole weight of the vehicle and its load. A still better arrangement to do away



with the vibration, jarring, jolting and pounding that attends the passage over an ordinarily good road, is an arrangement shown in the accompanying cut. Here the rubber is placed between the springs and does away entirely with all vibration, thus making the spring one of the most perfect in existence. This is designed specially for broughams, landaus and coaches. The rubber open-heads work with absolute freedom and with no friction or squeaking of the heads and eyes. Manufactured by the Spring Perch Co., Bridgeport, Conn.

The Woonsocket Combination Boot.

THE trade in lumbermen's overs and boots is one that in the



last few years has assumed large proportions. When these goods were first put upon the market many mistakes were made, as few knew exactly what was required. To-day, however, lumbermen's goods are made to withstand the peculiar wear to which they are exposed and their manufacture is very nearly an exact science. Of the many styles in vogue none have attained a greater or more deserved popularity than the "Combination Boot" here shown. It is in reality a wool boot and an ankle boot combined. As the rubber ankle boot is made especially for the wool

boot it is an exact fit, and this fact alone wonderfully increases its durability. The rubber is made of the well-known Woonsocket boot-com-

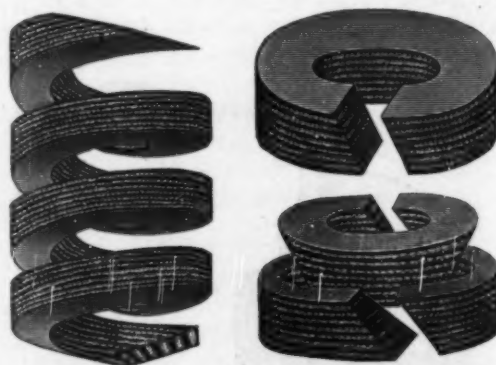
pound, while the wool boot is made of the best of material and of itself is exceeding durable. These goods were launched last season, and had a phenomenal sale, and as orders are now coming in this year's sales will be even larger. A second grade of the goods, known as the "Rhode Island Combination," is

also on the market, which is called the best second-grade boot of this description now before the public. These goods are manufactured by the Woonsocket Rubber Co., Providence, R. I.

A New Process in the Manufacture of Rubber Packings.

THE use of rubber packings is constantly on the increase, and within the last year or two a great deal of hard experimental work has been done to perfect packings for various purposes. A process that should commend itself to those who are interested in the use of these goods is what is known as the Crandall cold-oil process. To begin, in the manufacture of this packing, cuts of which we show, the stock is prepared especially for this work. It is made of alternate layers of duck and rubber, both being of the very best quality. The lubricating compound is then forced into the packing by a patented process. That is, cold oil under hydraulic pressure thoroughly saturates the fiber without at all weakening the gum, the packing coming out tough and elastic and in no way injured. The invention is that of an

experienced engineer and many mechanical experts have reported very favorably upon it; indeed a committee of them removed all the oil from some of the Crandall packing and then tested it and found both the rubber and fiber uninjured. This proved without a doubt that in the cold-oil process no chemical change whatever took place. In the cuts shown, Figure 1 is what is known as the Extension Ring Packing, for steam use. In this there are combined three objects, durability, tightness, and convenience. This packing has been very carefully tested and is now in use in many of the large steam industries and pumping stations in the United States. It is a perfect fit for rod and stuffing-box and is quickly placed for use.

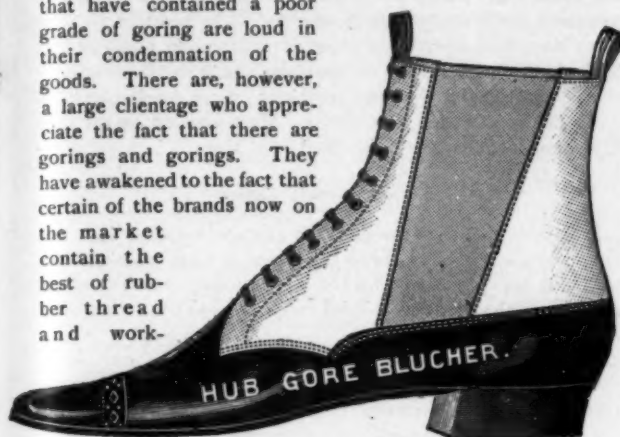


The rings are made in any size from 5-8 to 30 inches. Figure 2 is an Automatic or Sectional Ring Packing. This is designed for rods out of center, cut rods, and places that are difficult to keep tight otherwise. Figure 3 shows an Extension Coil Packing and this is made in the shape shown, as there is a decided call for a packing that can be kept in stock by dealers and large consumers. This is made of the same excellent material as the other packings and treated by the same process. It is kept in stock in sizes from $\frac{1}{4}$ to 1 inch and the strips are made twelve feet in length, coiled and placed in boxes adapted for each size. This makes it convenient to handle and keeps it free from contamination from dust and grit. Any size can be easily manufactured to order. In addition to this the same company make an Automatic Sectional Packing in all sizes for gaskets and

flange packings. Manufactured by the Crandall Packing Co., Palmyra, N. Y.

The Hub Gore Blucher.

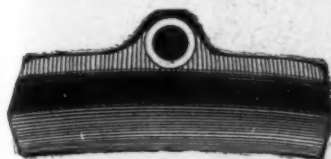
THE Congress shoe is one of the most satisfactory of shoes, if only the goring stands. Those who have purchased shoes that have contained a poor grade of goring are loud in their condemnation of the goods. There are, however, a large clientage who appreciate the fact that there are gorings and gorings. They have awakened to the fact that certain of the brands now on the market contain the best of rubber thread and work-



manship that ensures permanent elasticity. Perhaps no elastic cloth is better known to-day or more fully appreciated than the "Hub Gore." In addition to the skill and care put upon the selection of materials and their manufacture, the managers of the business are progressive business-men who knew that they had a good thing and were determined that all others should know it. One of these practical plans for pleasing the public and advertising their Gore was to get a celebrated designer to make for them a fashionable shoe. This is shown in the illustration and is known as the Hub Gore Blucher. Like the famous "One Hoss Shay," all parts are equally strong and there will be no wearing out of one portion before the other. It will simply last, and last until, in a ripe old age, the whole will one day be run out. Manufactured by all progressive shoe-houses; originated by the Hub Gore Co., Boston.

Queen City Brake-Block.

THE use of rubber in fine carriages is constantly on the increase. One of the latest inventions is a brake-block, the shoe of which is made of a fine grade of India-rubber. This rubber is firmly held to the irons, which are closely fitted, and when applied to the brake it is impossible for it to drop out. It has been found to be a most excellent thing for carriages and light vehicles and the trade for them is constantly growing. The manufacturers have quantities of testimonials that are daily reaching them, and all of them speak of the simplicity, efficacy and durability of the attachment. The special advantage of this block is that a very light pressure will firmly



lock the wheels so that it can be applied effectively by man, woman or child. The old-fashioned metal blocks were never satisfactory, as they wear smooth and are not only hard to apply, but exceedingly destructive in their action. These blocks are manufactured by J. H. Kohmescher & Co., No. 30 West Fourth street, Cincinnati, Ohio.

"Pneumaticum" Tire-Mender.

THERE have been for some time, in fact ever since the introduction of the pneumatic tire, various devices for repairing punctures. A common device has been to cut a hole through the rubber and fabric and to insert an air-tight plug with a head on the inside. There has been, however, one serious fault with this, as in cutting a round hole through the tire both the warp and woof were cut and the fabric decidedly weakened. An instrument that entirely does away with this method of work and one that has been found exceedingly practical and useful, is shown here. To begin, the tool is simply a metal-syringe, the nozzle terminating in an extremely sharp point; it is indeed, a hollow needle. The barrel of the syringe is filled with a prepared gum and the needle is inserted in the hole made by the puncture. The barrel is heated by burning two or three matches under it or by the flame of a candle and while pressing the handles the tip is slowly drawn out of the puncture. When the needle is entirely out of the puncture it will be found that the gum from the cylinder has completely filled the hole, leaving a bead of it on the inside and the puncture is mended so that it is really stronger in that part than it was before the accident. The bead of gum on the inside can be made into a flat-head by

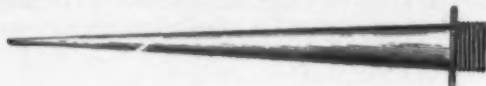


pressing while still warm the two walls of the tire together. This mender has been subjected to the most practical tests and is found to be the simplest and most successful of all wheelmen's tools now on the market. Manufactured by the "Pneumaticum" Tire-Mender Co., No. 122 Pearl street, Boston.

The Peerless Oil-Cup.

THE ordinary tin or brass oil-can or "oiler" is a source of constant trouble. Whether used in the engine-room, on the machines and shafting in a manufactory or on a locomotive, they are forever getting battered out of shape and then leaking. A metal oiler that never leaks is an article practically unknown. The use of rubber has often been suggested to overcome this serious fault, but the fact that oils destroy caoutchouc made it impracticable. When, therefore, a practical rubber-man announced that he had a rubber oil-can that would resist the action of all oils and would never leak, considerable skepticism was expressed. The article was put upon the market, however, and given the most severe tests, with the result that it was

proved to possess all the virtues claimed for it. Not only did it resist the oil that it was filled with, but after twelve months soaking in the most destructive oils known the virtue of the rubber remained unimpaired. This test convinced the most skeptical and the article was pronounced a success. The oiler is in shape exactly like its metal counterpart, the whole of the body of the can being molded in one piece. The rubber is finished with a coat of lustrous varnish, and is fully as neat and



attractive in appearance as the best brass can. The nozzle is of metal which screws into a metal nipple that is vulcanized into the neck of the can. The price of this article is about the same as the medium grade of brass oilers. The can itself is the subject of a patent recently issued (No. 472,225) while the oil-resisting compound is a secret discovered by Edward L. Perry, President of the Peerless Rubber Manufacturing Co., of New York, by whom the article is manufactured and marketed.

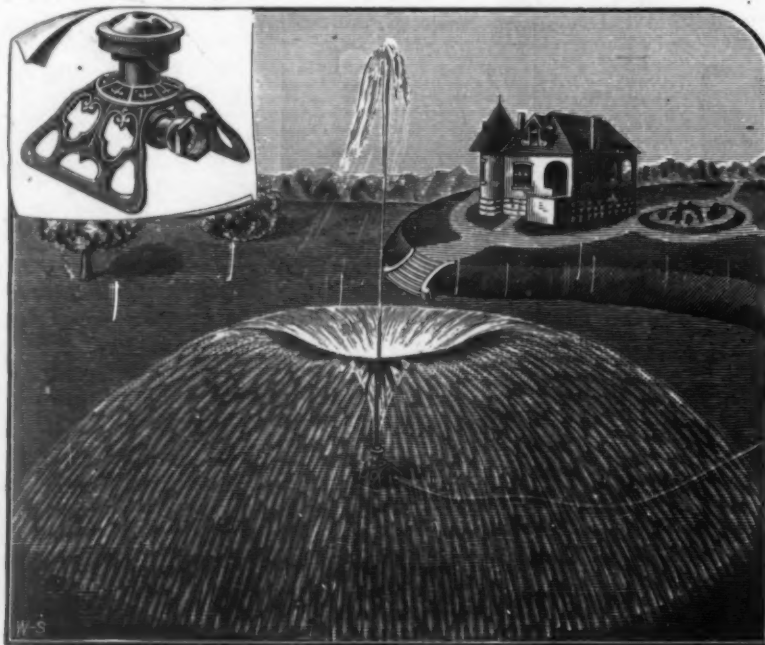
Cactus Lawn-Sprinkler.

THE past year has been a remarkable one in the production

be decidedly of advantage. It has no revolving parts that leak or wear out, the openings throughout are equal in area to one-half inch, and therefore, if the water is sandy or gritty, particles wash out without the least fear of clogging. The sprinkler can be moved about on the lawn while in operation without turning the water off. With a low pressure it distributes an even and beautiful spray thirty feet in diameter. In addition to this, there is a center fountain running from fifteen to eighteen feet in the air. The designers of this claim that it is the most durable, beautiful and cheapest sprinkler in the market and are giving it the strongest guarantees. Manufactured by the Ette & Henger Manufacturing Co., St. Louis, Mo.

Aldrich Bicycle Cape.

It is perhaps safe to say that the average bicyclist does not intend to spend much time on his wheel in rainy weather. At the same time on long trips the rain is always liable to come, and where the machine is used daily, at some time the wheelman is bound to get wet unless he has some protection from the weather. To this end the Aldrich Bicycle Cape has been designed, and letters patent applied for. It is so arranged that one is wholly protected from the rain, and, being made of the best waterproof material, cannot wet through. It is very light in weight—only twenty-eight ounces—and can be easily folded, making a compact bundle which is easily carried. When this is worn and a guard is put on the wheels it is impossible for the rider to get wet, no



of beautiful shapes in lawn-sprinklers. Of them all perhaps none has struck the popular fancy more satisfactorily than has the sprinkler herewith shown. It has many points that seem to

matter how rainy it may be or how deep the mud. Manufactured by L. M. Alexander, No. 191 Front street, Worcester, Mass.

THE EARLY MANUFACTURE OF RUBBER WEB.

THOSE engaged in the manufacture of India-rubber thread and similar products by modern processes may feel some interest in an account of the manufacture of India-rubber web before the introduction of vulcanization, as contributed to the *Journal of the Franklin Institute* for February, 1837. It is given by Franklin Peale, in recording his observations at the manufactory at St. Denis, near Paris, during the year 1834. That and also similar establishments were in those days jealously guarded against the leakage of the secrets of the trade, so that Mr. Peale's account was one of the first given to the world of this manufacture. He states that no pledge was given to conceal what he had learned, and he adds, in his introductory notes: "The fabric was commenced at Vienna but much improved and extended in the manufactory at St. Denis, in which there are about 1500 of the machines for plaiting the thread around the filaments of gum, and all the other departments in correspondent proportion." The details of the industry follow:

I. The gum elastic is provided in the usual form of bottles. The first operation is to divide these bottles into two equal parts; they are then placed in piles of six or eight in height and of an indefinite number in extent, upon a plank, and another plank is placed upon them, when the two are drawn together by wooden screws and nuts. They remain in this state a sufficient time to render them flat, or to take out in a great measure the original curvature of the bottles.

II. The first machine contains a circular knife which revolves rapidly, its diameter being about eight inches. At the side of its edge is an advancing carriage or slide, which receives its movement by means of a screw from the shaft of the knife. Upon this slide is attached the gum, a hole being made in the center to receive a screw, which serves as a pivot upon which it may turn; it is held down by a nut that is screwed upon it, and the edges are held down by springs placed near to the knife, but not so strong as to prevent its turning under them. A box under the table contains water, in which the knife runs, and a box above it encloses the blade and prevents the water from being thrown into the face of the workman. When the machine is started, the gum advances and is turned round by hand, while the knife cuts off the irregular circumference, until a continuous slip comes off, which the workman takes hold of and draws away, the carriage advancing and the knife cutting until the gum is exhausted. The operation resembles the cutting of leather strings out of circular pieces of that material in the manner practised in the olden time by shoemakers.

III. These slips pass into a bucket of water, from which they are taken and examined through their whole length by a woman, who removes the defective parts and joins together the ends of the slips, by cutting them off in a sloping direction and making a nick near the ex-

tremities, with a pair of scissors, in the manner here indicated. These ends are then placed together and hammered with some force upon an anvil, by which means they are made to adhere with considerable tenacity.

IV. These slips thus joined pass to another engine, which resembles in almost all respects the slitting mills of iron works, of a size proportionate to the material upon which they operate. The slip, always contained in water, is guided into this cutting mill, which has five or six blades according to the width of the slip, and is kept in its place and prevented from turning by a slight spring. After passing between the cutters it is drawn off by two rollers, between which it passes, and from thence into the hands of the attendant, who passes the slip, thus divided into threads, into water.

V. The filaments then pass into the hands of females, who examine them through their whole extent, remove the imperfect parts and join the extremities as before.

VI. The next machine is important, having for its object to remove the elasticity of the gum, or in other words, to stretch the filaments to their utmost extent. It consists of a reel of eighteen or twenty inches in diameter, revolving with considerable rapidity. Between the attendant and the reel is a wheel with several grooves of different diameters, revolving with a movement slow compared to that of the reel, and which has a transverse movement from the right to the left side, thus serving as a guide to the filament, and preventing it from overlapping upon the reel. This latter wheel was evidently intended to give an equal tension to the gum as it was wound upon the reel, but I observed that the filament was simply held by the hand, and the wheel only used as a guide; sufficient practice on the part of the workman, giving to the motion every desirable regularity. The slips are left upon these reels to dry and harden for a period varying from three to six weeks.

VII. They are then wound upon bobbins by the usual means of a wheel and spindle, by a woman, care being taken to retain the tension:

VIII. The next operation is the plaiting of silk, cotton, thread or other material, around the filament of gum, previously colored or white, according to the objects into which it is subsequently to be manufactured. This is performed by an extremely ingenious machine, the construction of which it would be impossible to illustrate without drawings; the machines are manufactured, and for sale in Paris, by Blanchin, No. 98 Rue Faubourg St. Martin. They have the important quality of stopping if a thread breaks or is exhausted.

IX. The machine last alluded to draws the filament off the bobbins upon which it was previously wound, and after plaiting around it winds it again upon others, which when filled, are conveyed to the looms, and there placed in frames, with a strap and counterweight to give the necessary tension, and in sufficient number to form the warp of

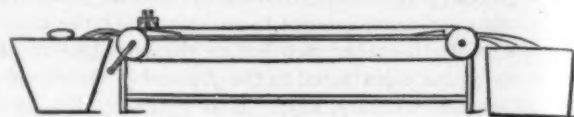
the web, which of course varies in width according to the object to which it is destined. The looms were usually simple and moved by hand, but there are also looms capable of weaving six webs or more at the same time, the shuttles of which are furnished with racks by means of which they are carried through the chain.

The plaited filament is combined with silk or other matter, and filled with different materials according to the object of the manufacturer, and in this respect, all the variety of the weaver's art may be exercised.

All the operations thus far noticed have been performed by machinery, driven by a steam-engine, with the exception of the looms, which it appears to me are not necessarily excepted. In most of them the gum has been deprived of its elasticity, the last operation consists in restoring this quality. This is effected by taking advantage of that well-known though extraordinary character which gum elastic possesses, of shrinking by the application of heat.

X. The machine to effect this is a long table covered with coarse cloth or felting in several thicknesses; at each end is a shaft passing from one side to the other, upon which are pullies—a strap passes over these pullies, connecting the two ends of the table by a band, which has upon it a crotch. One of the shafts is furnished with a

handle to give motion to the whole. These will be best illustrated by a sketch as below: a heavy square smooth iron, heated to a convenient degree, is drawn by means of these straps from end to end; three or four webs are laid upon the table at one time, their extremities on the right



are held by weights, whilst a light block lies upon them at the other extremity, keeping them flat, but not preventing their advancing as they shrink by the application of the heat of the iron; inclined planes near the ends lift off the weight at the close of the operation. The iron is of the form here indicated, with wooden handles for convenient management. Baskets at one end and boxes at the other, receive and supply the web.

The web shrinks in length as the heated iron passes over it, to about $\frac{2}{3}$ of the previous length, and has all its original elasticity restored. This operation closes the process, the web being subsequently prepared for sale by being made into rolls and properly packed.

THE THEORY OF THE RUBBER COMBINATION.

A PROMINENT rubber-manufacturer whose corporation has been included in the new United States Rubber Co., in speaking of the character of that organization, said to a representative of this journal:

"I do not think it can rightly be called a trust, as that term, in its true signification, means a combination of owners of property whose sole object is to manipulate prices and perform other acts, with the purpose of simply enriching themselves by sheer force of power at the expense of the public. I believe that the day for such organizations has fully passed. When one now springs to the surface, it is so thoroughly advertised in all the daily newspapers that a sentiment sets in against it which generally paralyzes men of great nerve, and if it does not shorten its sail at once, a hundred shrewd men immediately plan in these days of close competition to catch the breeze of popular favor and institute a guerilla warfare on the large concern. Such efforts are unwise.

"But there is a combination to which the public cannot take exception. It is the aggregation of brains and capital to secure the more economical manufacture of articles of use. If the rubber shoe can be made better and cheaper than now, it is certainly an achievement which will do the public no harm. Take the ten companies which are to be incorporated in the new rubber company. Nearly every one of them has an agency in New York with a full staff of people. Eight or ten rent bills could be consolidated into one, and while it might be more expensive than a single one, it would not be so much so as two of the best. This

is true, not only of New York, but of numerous branches throughout the country. The smaller concerns cannot afford the great expenses attached to a wide exposition of their goods at home and abroad and they will gain largely in the concentration of efforts in this direction. Then in buying we will certainly have a great advantage. Take cashmerettes, for which we now pay 70 cents. It is reasonable to suppose, if we approach the manufacturer with an order ten times as large as he has been in the habit of getting from any one of us, that we will be favored with a price a little better than usual. That order coming to him in one lump means that he can run his factory right along without cessation until it is completed, and he need not waste his energies in hunting up another contract before he has started on the first so as not to have a lapse in his labor. Under those circumstances cashmerettes could be obtained for 65 or 67 cents, and when we play the whole gamut in the hundred and one articles we use in a rubber-mill we have an advantage which if we did not use we could hardly be called business men.

"In the buying of rubber we will get it in large quantities and if we don't get it cheaply, something will be decidedly wrong. Freight-rates, insurance charges, commissions, etc., will all be pared down, and the party who wants our trade will hardly risk its cessation by giving us poor rubber. Then in this business, more probably than in any other, one man does not know it all. Each factory has had its secrets carefully—yes, jealously—guarded, and the compound of one mill is only guessed at in the other. A communion of

the best minds in the business in this respect will be of advantage to all. Methods can be compared and when they are known better progress can be made towards further improvement in them. We have no technical schools devoted to instruction in the manufacture of rubber goods, in which respect the business is an anomalous one, and susceptible of improvement. Then some mills are better adapted to a certain class of goods and their position to the trade contiguous to them can be better utilized.

"Regarding the Wall-street feature it was necessary in the absorption of these concerns to have men with capital and financial influence to buy out stockholders in the various companies who did not care to go on with the new concern. Some of the old owners had received little or no

return on their investments for years, and at this stage of their business career would prefer to be released from further interest in the matter. Naturally they would look with suspicion on an attempt of others parties who had prospered about as they had to buy them out on credit, consequently strong parties who had money could see ahead, and beyond the mere rubber situation, had to be enlisted to do the financial work. As the organization gets into swing these men will gradually relinquish their hold and the directory and personalty will be mainly of rubber men. Naturally there could be many other advantages noted, and discussed, but these are sufficient. The plan is a careful one and those who are interested believe it cannot fail to prove the wisdom of those who conceived it."

Gutta-Percha and the Pacific Cable.

THE Gutta percha people wonder sometimes where that gum is to come from in sufficient quantities for the Pacific cable, and the thought of a possible shortage in that connection is often temporarily sufficient to advance the price of this commodity. There is, however, always a poise in commercial affairs. An old-time engineer on the French cable said the other day:

"The Pacific cable has not yet been laid, nor will it be in the present state of the science of cable-laying. Off the Japanese and Asiatic coasts is a cut or channel four miles in depth, and in all the soundings which have been taken—and they have been fairly thorough—nothing better can be found. Now a depth of two miles is bad enough. That is found on the plateau between Newfoundland and Ireland, and requires 'three lifts' in the handling of the cable, and engineers do not care to enlarge their requirements in that direction. They certainly would not endanger their reputation in the financial world by recommending the Pacific cable with this contingency uppermost. Land-and-ocean lines are more feasible, but that experiment was once made with disastrous results.

"Gutta-percha is a scarce article, but hardly so much as is generally supposed. Nor has any good substitute for it been found. India-rubber is too absorbent, and although it is used in some isolated cases with proclaimed good results, it has not obtained any extended use. Balata has too low a melting point, and becomes too soft in use. There is too much adulteration in Gutta-percha practised nowadays. We string some gutta-covered wires on the ceiling of a room once in a while, and the heat of a room in winter will make them sweat oil. I never carefully examined the oil, and have supposed it is castor-oil, but it may be linseed. Such Gutta-percha is not fit to put under water, and great care has to be used in purchasing and inspection not to get caught by it. I hardly know where we would get enough Gutta-percha in the event of any extended cable-laying, but the world is pretty well supplied with such conveniences, and as we never fail to grapple them when broken, and they wear out very slowly, we

stand a good chance of getting along during the next generation."

The channel near the Asiatic coast referred to by the engineer is so deep as to bring from the equator the famous warm current which softens the climate of Alaska and our Pacific-coast States. It is analogous to the Gulf Stream on the Atlantic coast.

Another Receipt For Making Artificial Ivory.

THERE has been a great deal of interest manifested of late in the production of artificial ivory, which could be used as a substitute for natural ivory in billiard balls and kindred articles. As a rule experiments have been futile. A recent patent, however, based upon the use of materials of which natural ivory is composed, seems to come nearer to it. Natural ivory under analysis shows albumen, gelatine, alumina, magnesia, calcium carbonate and tribasic phosphate of lime. By this process quicklime is first treated with sufficient water to convert it into the hydrate, but before it has become completely "slaked" an aqueous solution of phosphoric acid is poured upon it, and while stirring the mixture the calcium carbonate, magnesia and alumina are incorporated in small quantities at a time; and lastly the gelatine and albumen dissolved in water are added. The point to aim at is to obtain a compost sufficiently plastic and as intimately mixed as possible. It is then set aside to allow the phosphoric acid to complete its action upon the chalk. The following day the mixture, while still plastic, is pressed into the desired form in molds, and dried in a current of air at a temperature of about 150° C. To complete the preparation of the artificial product by this process it is kept for three or four weeks, during which time it becomes perfectly hard. The following are the proportions for the mixture, which can be colored by the addition of suitable substances: Quicklime, 100 parts; water, 300 parts; phosphoric-acid solution (1.05 specific gravity), 75 parts; calcium carbonate, 16 parts; magnesia, 1 to 2 parts; alumina precipitated, 5 parts; gelatine, 15 parts.

Indications of the Rubber-Cloth Trade.

THE rubber-cloth trade is enthusiastic over the outlook for the season which opens in this month. Every day a new starting point is made, and an impetus given which carries the business to a higher level, and these have been successive for a long time. Stocks on account of the rains are known to be light, and as they must be replenished a firm foundation is naturally the basis. One firm in New York received the other day an order for 23,000 yards in nine different styles. This coming in so assorted a manner is considered by the trade as an indication of the state of stocks, while if it had been of one pattern, it might have been for a special order which would show rather that the demand was temporary. Manufacturers have schooled themselves to the necessities of the home trade, and are working their yarns economically, or deftly mixing them with cotton so as to give a serviceable article at a reasonable price.

Naturally the reduction of a dollar or two in a mackintosh catches a trade geometrically increasing as the price goes downward. Good cottons can now be made for eight or ten cents, woollens stamped on cotton at a few cents more, and for woollens from that amount upward. There are very few foreign goods in the market and domestic manufacturers have little trouble with competition. The English manufacturer sometimes hits a new pattern which takes well, and has a little run. For instance a case is quoted in a cloth which the foreign manufacturer can sell for 67 cents, the home mill can produce and dispose of at 42½ cents. Now if the pattern is new and taking the Englishman gets the trade until the same can be woven here, when he has to retire.

This chief demand this season is for plain mixtures of two yarns. Much attention is being paid in the way of linings, which is the costly part of the article. A cheap cloth is supplemented by a lining of silk costing four times as much, it being well understood that the average man or woman must have that sort if it does come high. The mills are all busy and there is a general demand for more help.

Rubber Carriage Cloth.

A VERY large business is done throughout the United States in the manufacture of rubber cloth for covering tops of buggies, also for canopy tops. These goods are manufactured so skilfully that they imitate very closely in appearance the genuine leather, and an ordinary observer thinks that it is leather.

They are made in various thicknesses, the thinnest being the boot cloth, the heaviest being a duck covered with rubber which is used for top covering. The standard widths are 42, 52 and 60 inches, and for special purposes there are intermediate widths. The foundations of all these are different qualities of duck and strong cotton cloths, and in most of them a good quality of rubber is calendered upon the duck, when it is then put through a pebbling-machine which gives it a grain surface similar to leather. These

machines are very costly and some of the engraved rolls produce the most beautiful effects. Alligator leather is very closely imitated, and for different lines of upholstering different grains are used. Goods are produced in a variety of colors, but the standard is black. An imitation of rubber cloth is what is known as enameled cloth, but this has many defects. It is an oil compound, and will crack in the cold weather, and as a rule is entirely unsuited for carriage covering. It is, however, used in a number of ways in carriage-building—for the boots, cushion backs, bow cushions and side curtains. This, like the rubber cloth, is sometimes spread on drill that is dyed in various colors, yellow, brown and green being usually the colors selected for cushions. For some purposes a drill that greatly resembles patent leather is used for cushion work.

Waterproofing Without Rubber.

THERE has been for some time past an agitation among rubber-clothing men in regard to certain fabrics which were waterproofed without the use of rubber entering as competitors in the waterproof clothing business. In this connection it will perhaps be interesting to read what is a well-known method of waterproofing cloth in certain factories abroad.

"The cloth is passed into a special machine, in which it is saturated with aluminum acetate, is dried and passed into a soap beck. It is necessary in this operation to produce a basic compound. For this purpose there are employed equal weights of salts of aluminum and of lead. Care must be taken not to introduce too large quantities of free acid with the aluminum sulphate, since the latter contains always a certain quantity of sulphuric acid, which, during dessication, displaces the acetic acid. To avoid this inconvenience, there are added per liter from ten to eighty grams of soda. The most favorable temperature is fifty degrees. Heating by direct steam must be avoided. For preparing the soap bath the inventor utilizes the fact that an aqueous solution of soap forms true solutions with mixtures of fat and wax, resins, mineral oils and even caoutchouc. To this end he takes a ten per cent. solution of gum Paraguay in oil of turpentine. The proportions to be employed for a square meter of cloth are 30 grams tallow soap, 25 grams Japan wax, 1.5 gram gum Paraguay, 1 gram good varnish. The wax is first melted, the gum and the varnish are added, and then for each kilometer of the solid gum there are added 0.5 grams of a solution saturated in heat of potassium sulphide [liver of sulphur]. The mixture is stirred and boiled, when sulphuretted hydrogen is liberated. A boiling solution of soap is added, when the bath is fit for use."

Mistaken Information Concerning Linoleum.

A RECENT number of the *Carriage Monthly* devotes a good deal of space to describing various floor-cloths, such as oil-cloth, linoleum, table and stair-cloth. Their description of the manufacture of oil-cloth is precise and no manufacturer can criticise it. When, however, they take the matter of the recent invention known as linoleum,

which is daily growing in popularity they make an egregious blunder. They claim, for example, that the composition is made of India-rubber and ground cork mixed with oxidized linseed-oil, which, being kneaded with other ingredients, is rolled into sheets by passing between steam-cylinders, during which process it is kept soft by heat. The fact of the matter is that no India-rubber is used in linoleum at all. The compound, before it is oxidized, is composed of linseed-oil, ground cork, ocher, and various cheap pigments for producing whatever colors may be desired. In order to make the compound more tenacious a certain amount of lime-hardened resin is added, and sometimes a little Kauri gum. This composition is mixed on machines much like rubber-grinders and then spread in sheets by a huge calender, which is three times the size of any rubber-calender in use, and is run by an engine of its own. There is a French compound for linoleum which has a small percentage of African rubber in it, but it has never been practised, as the rubber is too expensive in work of this kind.

Increased Use of Rubber Stamps.

NOTHING could indicate more plainly the commercial spirit of the age than the immense increase in the manufacture and sale of rubber stamps. A few years ago this was a comparatively unimportant business; now there is hardly a town in the country that is not deluged with agents, and the number of stores devoted entirely to their sale is increasing constantly. Their sale has been popularized somewhat of late by the fad for the little pocket stamps for use on pencils, charms, etc., which are really only toys, but which often lead to the purchase of a practical machine. The pocket stamps with the owner's name can be bought anywhere for from 15 cents up, with a well-inked pad. The cheapest self-inking desk stamps cost about 50 cents, and these are really about as serviceable as the more expensive ones. Many business men, especially those who have to use a number of stamps, prefer a plain stamp without any inking device, pressing it on an inking-pad as often as may be necessary.

The varieties of stamps now made, and the use to which they are put, are almost limitless. Perhaps as common and as much used a variety as any is the dating-stamp. Some of these have a font of numerals and need to have the proper date "set up" by hand each day, while others have the numerals and the names of the months, etc., set on endless belts which can be revolved by hand so as to bring the correct date into the proper position. In the cheaper kinds the fingers touch these belts of type; more expensive varieties turn by means of small wheels.

Most complex and costly of all are the numbering stamps which automatically print the numbers in numerical order. Until a few years ago these were made almost entirely in Germany, but now an American article is made that is compacter, more durable and only half as costly. By an ingenious contrivance the machine is fixed so that when desirable the same number is printed twice. This is used especially in banks for numbering checks and their

stubs. Many shoe-manufacturers also use this device in stamping shoes so as to number them by pairs. The machines are of the same size as ordinary stamps and cost from \$12 to \$30. The machinery for revolving the wheels with the numbers on them is very simple considering the complexity of the problem.

Still another kind of the stamp is used in the railroad office. In these the die is not of rubber, but of metal, and prints like a typewriter through a ribbon. The ribbon is used because metal types do not print well from pads, and the metal types are used because the nervous and impulsive fists of the railroad officials would soon send rubber type to the "hell box." The machine does not print so well as the ordinary stamp, but is speedier. A great many stamps are used by libraries, which require three kinds, one for stamping dates on cards, one for putting the imprint of the library on new books and magazines and an embossing stamp or seal press for indelibly marking plates and other valuable portions of books. Many librarians mark in this way every rooth page of books as a safeguard against theft. A boom has been given to the manufacture of seal stamps by the unusual number of societies, orders and corporations of all sorts that have sprung up of late. Business men also are taking more and more to their use and though it is not regarded as a safe thing to use them for signatures they are invaluable for dates and for miscellaneous notes. There is hardly any small desk convenience that is of more service.—*Springfield Republican*.

The Rubber Trade of Honduras.

THE political troubles in Honduras, which have resulted in closing the Atlantic coast of that country to trade with the United States, will lessen to some extent the volume of rubber exported from Central America, but will not be a material factor in the rubber market generally.

The gum obtained in Honduras is of a good quality, and is very free from tarry matter. The forests in some sections furnish rubber in great abundance, but it is rather of the Tuno order. Most of that exported is picked up by trading vessels which find their way into the West Indies, or to Greytown, where the shipments to this country from Honduras lose their identity, and totals are only guessed. This is the season of gathering, and in that sense the troubles there are unfortunate, and whatever may remain of the season, which lasts until October, will be almost entirely lost. The Treasury Department reports the amount of rubber imported from Honduras by the United States during the last fiscal year at 273,505 pounds, valued at \$117,170.

It may prove of interest to some of our inventors in the India-rubber line to learn that the official journal of the British Patent-Office announces all specifications of patents granted there will be published hereafter at the uniform price of 8 pence each. It is understood that no extra charge will be made for postage.

RECENT RUBBER PATENTS.

AMONG recent patents issued by the United States Patent-Office, embodying applications of India-rubber or Gutta-percha, to a greater or less extent, have been the following. It is not practicable here to do more than to note the use of rubber in each case, with sufficient detail to enable those who are interested to decide whether or not to look into any particular patent more fully:

No. 474,685.—Atomizer. Victor C. Vant Woud, Brooklyn, N. Y.

As a new article of manufacture, a nose-piece for atomizers, having a discharge-opening and an opening to engage the discharge-nozzle of an ordinary atomizer, the walls of said nozzle-engaging opening being made of soft rubber, whereby said nose-piece is adapted for use with atomizers having nozzles of different sizes without being fitted thereto.

No. 474,043.—Shoe-Fastening. Charles A. Harvey, New York, N. Y., assignor by direct and mesne assignments, to the Harvey Fastening Co., of New Jersey.

A fastening for shoes and other articles, consisting of a strip of elastic material secured to one flap of the shoe, a series of hooks connected with the free edge of said elastic strip and projecting through the flap and above the surface of the side of the flap opposite the elastic material, and securing devices adapted to engage the said hooks, and a facing strip for concealing the fastening devices secured to the other flap of the shoe.

No. 474,433.—Rubber Tire for Bicycles. Alexander Strauss, New York, assignor to the New York Belting and Packing Co., Ltd., same place.

The method of manufacturing hollow tires by making a tube of textile fabric, forming a loop or loops thereon, inserting a rubber tube and vulcanizing the latter by steam admitted under pressure to the interior thereof, splicing the ends of the compound tube thus formed, and covering the same with a layer of rubber.

No. 474,450.—Pneumatic Tire for Wheels. Otto Lindner, Brussels, Belgium.

In elastic and their respective supporting metal tires for velocipede and invalid-chair wheels, the combination of an elastic (inflatable tire to be used as such or as an outer covering of such only) bearing on its lower part on both its circumferential sides special-shaped lips or seams which are drawn and kept into grooves of the metal tire by a wire, band, or other suitable material, whereby the elastic tire is secured to the metal tire, and the special lips or seams in such secured position form a guard against the deterioration of the elastic tire.

No. 474,589.—Vehicle Tire. Alexander T. Brown, Syracuse, N. Y.

The combination, with a vehicle-tire crescent-shaped in cross-section and having thickened side edges, of a plano-convex rim formed with concave side edges for the reception of the thickened edges of the tire and a band fitting around the plane of the rim and adapted to be moved sidewise to lock both thickened edges in their respective seats.

No. 474,605.—Atomizer. George Laubensdorfer and Frederick Lipp, New York, assignors to William Hughschoff, same place.

The combination of an air-supply tube, a nozzle screwed over the same, said nozzle having a conically-tapering opening, and a suction-tube provided with a tapering end that is adapted to fit tightly into the discharge-opening of the nozzle, said suction-tube being provided with a lateral aperture, through which the air has to pass on its way through the discharge-orifice of the nozzle, so as to produce an atomizing action.

No. 474,693.—Paint. Charles H. Reaney, Washington, D. C.

The herein-described paint, consisting of zinc-oxide, red lead, drop ivory black, pulverized slate, raw linseed-oil, spirits of turpentine, oxide drier, bisulphide of carbon and pure rubber in the proportions specified.

No. 475,343.—Method of Repairing Pneumatic Tires. Chas. D. Rice, Hartford, Conn., assignor to the Pope Manufacturing Co., Boston, Mass.

The method of repairing pneumatic tires for bicycles, that consists, first, in cutting a tapered hole through the wall of the tire and embracing a punctured part; second, smearing the walls of the hole with adhesive material, as rubber cement; third, placing a tapered perforated plug in the plug-socket in the tire; fourth, drawing an expander from within the tire into the substance of the plug by means of a string extending there-through, and, fifth, trimming off the projecting end of the plug.

No. 475,384.—Flexible Hose or Tubing. John Cockburn, Edinburgh, Scotland, assignor to the North British Rubber Co., Ltd., same place.

A woven hose or pipe coated exteriorly with India-rubber and with a reinforcing covering containing two systems of wires, the members of which wind in rapid spirals in respectively opposite directions and are imbedded in interposed layers of rubber-coated cloth or canvas, the rubber components of the structure being vulcanized together.

No. 475,495.—Sinkers for Syringe-Tubes. Anton C. Eggers, Brooklyn, N. Y.

A sinker for syringe-tubes, composed of a ring-shaped body having tubular ends and a channel extending along one side of the ring-shaped sinker and connecting with the tubular ends while the remaining portion of the sinker is solid.

No. 475,712.—Compound for Waterproofing. James Stewart, Philadelphia, Pa., assignor to Matthew McVickar and Robert C. Gilbraith, same place.

A composition of matter for waterproofing purposes, consisting of ground leather, paper pulp, whiting, rosin-oil, linseed-oil, naphtha, dissolved hair, china-clay, and glue or gelatine, in the proportions stated.

No. 475,732.—India-Rubber Tire. Joseph Moseley and Benjamin Blundstone, Manchester, England.

1. In an India-rubber tire consisting of two or more layers, a joint constructed by stopping or stripping the outer layer or layers at the ends, serving the contiguous ends with fabric, and surrounding the serving with India-rubber flush with the remainder of the tire.

2. A tire consisting of one or more successive layers of seamless fabric and of India-rubber upon a core or tube of India-rubber, the outer layers being stripped or stopped at the ends, which are joined by a serving of fabric and a surrounding of India-rubber.

3. An India-rubber tire consisting of one or more successive layers of seamless fabric and India-rubber upon a core or tube of India-rubber, the outer layers being stripped or stopped at the ends of the tire, which are joined by successive servings of fabric and India-rubber until the joint is flush with the remainder of the tire.

No. 475,785.—Bicycle Tire. Frank H. Mason, Akron, Ohio.

A tire for bicycles, consisting of an endless closed rubber tube filled with hollow rubber balls of the same diameter as the inside diameter of the tube.

No. 475,870.—Packing. John C. F. Jones, Braddock, Pa.

A packing, consisting of a suitable core composed of leather, rubber, or other suitable substance, the cotton wick braided or

twisted and arranged about the said core, pegs or other means for attaching the said core and wick together, and the whole surrounded by braided cotton.

No. 475,920.—Electric Conductor. Charles W. Bassett, Newton, assignor to the Washburn & Moen Manufacturing Co., Worcester, Mass.

As an improved article of manufacture, an insulated electric conductor consisting of a metallic conductor having a seamless coating of paper extending over the same and a protective covering extending over said coating of paper.

No. 476,668.—Elastic Tire. John S. Smith, London, England.

An elastic tire comprising an inner tube capable of being inflated and a covering for the same, the edges of which form flaps for enabling the tire to be secured to the rim of the wheel by means of laces, a protecting-layer being arranged between the inflated tube and the rim of the wheel, the said layer being formed of two cappings which can be wholly or partially turned back to allow the withdrawal of the inflated tube from the covering and which, where adapted to be thrown back, are held by auxiliary laced flaps.

No. 476,215.—Cushioned Tire. George T. Reed, Baltimore, Md., assignor of one-half to Heston A. Cheatham, same place.

In a wheel, a hollow-faced metallic rim having an inwardly projecting flange on each of its edges and an opening on one of its sides, combined with a flexible tube adapted to be drawn through said opening and to rest in the hollow of the rim, said tube having a groove at each side normally of less width than the thickness of said flanges and into which grooves the flanges are forced as the tube is drawn into position, said grooves terminating in channels of greater width than the thickness of the flanges.

No. 476,216.—Bicycle Wheel. George T. Reed, Baltimore, Md., assignor of one-half to Heston A. Cheatham, same place.

In a wheel, the combination, with a hollow-faced rim, a pneumatic tube, and a tread partially inclosing the tube and resting in the said rim, of a series of spring-clamps interposed between the tube and the portions of the tread resting in the rim, said clamps having notched edges for the purpose specified, threaded bolts passing through the clamps and rim, and nuts on the bolts to draw the clamps and rim toward each other.

No. 476,424.—Handle for Bicycles. William C. Smith, Goshen, Ind.

The handle for bicycles, comprising the inner rubber adapted to fit closely around the handle-bar or metallic core and having therein a series of air-chambers or spaces separated by walls or ribs and an outer covering of harder rubber than said inner covering.

No. 476,670.—Bicycle Tire. Claudius H. Mitchell and Richard M. Veitch, Oakland, Cal.

The combination of a tire having metal spring and metal bands, and a rod, and the mode of connection between the rubber portion of the tire and the metal felly.

No. 476,679.—Pneumatic Tire. John F. Palmer, Riverside, Ill.

In combination, a slotted hollow felly and a pneumatic tire comprising a retaining-envelope formed of canvas-covered rubber with the rubber compressed and thickened toward the longitudinal center of the tread portion of the tire and provided along the said thickened portion with a web, forming with the said envelope the air-tube, beads along the edges of the retaining-envelope to enter the slot in the felly and fasten the tire in place, and an outer covering clamped along its edges between the said felly and the retaining envelope.

No. 476,680.—Pneumatic Tire. John F. Palmer, Riverside, Ill.

A pneumatic tire having an outer thickened tread portion of rubber inverted and held in position by a substantially non-stretching backing composed of two or more superimposed attached layers of diagonally-cut fabric, the fiber in alternate layers being arranged in opposite directions.

No. 476,681.—Pneumatic Tire. John F. Palmer, Riverside, Ill.

The method of producing an inner tube for pneumatic tubes, which consists, first, in applying to an annular mandrel having the proper curvature a curved non-stretching annular strip of flexible material, molding upon said mandrel a strip of rubber having its edges unjoined, thickening the rubber on the outer side of the mandrel or form, vulcanizing the parts together, and thereupon reversing the curvature of the flexible material and thickened portion of the rubber, and joining and sealing the edges of the strip to form the air-tube.

No. 476,686.—Pessary. Horace H. Taylor, Fresno, Cal., assignor of one-half to Nathan W. Moody, same place.

A pessary comprising a cylindrical hollow body of flexible material, having its sides thinner than the ends and transversely corrugated, a concave upper end, and a tubular extension projecting from the lower end, and provided with a check-valve in said tubular extension, said valve having its stem projecting beyond the end of the tubular extension.

No. 476,764.—Pneumatic Wheel for Vehicles. Joseph C. Hall, London, England.

A wheel for cycles, cabs, and other vehicles, consisting of a chamber filled with compressed air or gas, the walls of said chamber consisting of layers, separate jackets, or envelopes of India-rubber and non-expansive textile fabric and being secured to an axle by means of flanges extending therefrom at each side of the said chamber, the said walls having an inner tube or aperture through their center and through which the axle passes, and the said aperture or tube being composed of the same material or walls as the outer walls of the said chamber.

No. 477,048.—Bicycle Tire. Edward G. Dorchester, Geneva, N. Y.

A pneumatic tire formed of a rubber tube terminating with reversely beveled end edges lapping onto each other and connected together and a canvas lining covering said tube and extending over the splice thereof and cemented thereto.

No. 477,397.—Cycle Wheel. Charles E. Woodward, Chicopee Falls, Mass., assignor to the Overman Wheel Co., same place, and Hartford, Conn.

In a wheel, the combination, with the rim thereof constructed with an opening in its inner periphery, of a tire having its inner periphery constructed with an opening corresponding to that in the rim, an opening rectangular oblong transversely-bowed frame located within the tire and secured by its sides to the inner face thereof around the said opening therein, a removable inner air-tube adapted to be introduced into and withdrawn from the tire through the said opening therein and the opening in the rim, and means for connecting the said frame with the rim through the opening in it and the opening in the tire.

No. 477,502.—Wheel. William I. Bunker, La Grange, Ill.

In a vehicle-wheel, the combination of a rim and an elastic tire secured thereto, such tire being formed into a series of cushions arranged alternately on opposite sides of the center line of the rim.

No. 477,503.—Flexible Tube. William I. Bunker, La Grange, Ill.

In combination with a wheel, a flexible tire of rubber or other suitable material provided with a series of springs contiguous to each other, the springs being adapted to lean in the same direction and when subjected to pressure in cross-section to fold one upon the other and thus change the elastic action of the springs from a longitudinal to a transverse direction, and having sufficient resiliency to resume their normal positions when relieved from pressure.

No. 477,505.—Wheel. William I. Bunker, La Grange, Ill.

In a wheel, the combination of a rim provided with a series of threaded sockets, a series of elastic cushions provided with spiral springs, such springs being adapted to engage with the threaded sockets.

No. 477,506.—Wheel. William I. Bunker, La Grange, Ill.

In a wheel, the combination of a rim, a series of pneumatic cushions composing the tire, and a band encircling such cushions, securing them to the rim and compressing them to increase their elasticity and regulate the tension of the air.

No. 477,640.—Steam-Joint Packing. John G. Broman, Chicago, Ill.

The packing for steam and other joints consisting of the inclosing soft metal, having ridges, and a twisted fibrous asbestos filling.

No. 477,659.—Vehicle Wheel. Felix J. Huelsen and Jacob Nagal, Cleveland, Ohio.

A wheel having an expansible tube around its periphery and a rim for said tube having circumferential beads on each side of its center, in combination with a flexible cover stretched over the said tube and overlapping the said beads on the inside of the rim and expansible locking rings on the inside of said rim constructed with grooves adapted to said beads and having edges bearing on the overlapping edges of said cover.

No. 477,700.—Bicycle Tire. Charles W. Millet, Dolgeville, N. Y.

In a bicycle tire, the combination, with the tire and rim, of hollow elastic rings arranged side by side upon the rim, a cord upon which they are strung, and a tire inclosing them and detachably connected to the rim.

No. 477,773.—Wheel-Tire. Henry Myers, Philadelphia, Pa.

An inflatable tire composed of a flat endless sheet of elastic material adapted to be sprung into a V-shaped metal felly, said felly provided with projections adapted to engage similar projections on the flat endless elastic sheet to form an air-tight continuous inflatable tire.

No. 477,774.—Wheel-Tire. Henry Myers, Philadelphia, Pa.

A sectional wheel-tire comprising a number of sections, each composed of an elastic inner tube, an elastic-webbed metal tube, and an outer casing cast to said tubes and completely inclosing the same, said outer casing provided with flanges adapted to hold said sections onto a metal tire.

No. 477,787.—Electric Conductor. Charles T. Suedekor, Worcester, Mass., assignor to the Washburn & Moen Manufacturing Co., same place.

In an insulated electric conductor, the combination with a metallic conductor of a fire-proof compound consisting of calcined magnesias, china-clay, and silicate of soda applied to the metallic conductor, of a coating consisting of a compound of rubber applied to said fire-proof compound and a second fire-proof compound applied directly to said rubber compound.

No. 477,881.—Rubber Shoe. Emmett A. Saunders, Naugatuck, Conn., assignor to the Goodyear's Metallic Rubber Shoe Co., same place.

1. As an improved article of manufacture, a rubber shoe having an internal hollow elastic projection formed of the lining depressed from the exterior and sufficiently stiff to stand out from the line of the shoe and having the "outer" bridging said projection.

2. As an improved article of manufacture, a rubber shoe having an internal hollow elastic projection formed of the lining depressed from the exterior and bridged by a separate external strip supplemental to the outer, and said outer.

No. 477,923.—Fastening for Boots or Shoes. Walter E. Bennett, Boston, Mass.

The combination with a boot or shoe having at each side of its opening opposing series of permanently attached studs, of a series of flexible and elastic strips of varying lengths, each having at both ends eyes for removable engagement with opposite pairs of the studs.

No. 477,938.—Rubber Shoe. Samuel W. Powell and John W. Marshall, Richmond, Mo.

A rubber shoe formed at its heel with a pocket open at its upper end, an elastic strip concealed within the pocket and having its lower end fixedly secured at the base of the pocket,

and a fastening device on the upper end of the elastic strip, projecting above the upper edge of the rubber to engage a projection on a shoe.

No. 477,962.—Wheel for Velocipedes. Joseph B. Robertson, Belfast, Ireland.

For securing a pneumatic tire to the rim of a wheel, in combination with the bladder, a cover having air-channels near its edges, and a rim having tubular channels with narrow slits to admit the edges of the cover.

No. 477,998.—Pneumatic Tire. Thomas Dunn, London, England.

In a pneumatic tire, a protecting-band capable of readily undergoing slight contraction and expansion of length when in use at a number of points and flat or straight in cross-section and a strip of elastic material, such as India-rubber, of plano-convex form in cross-section, secured at its flat side to said protecting band, so as to form therewith a combined protecting-band and elastic strip.

No. 478,062.—Bicycle Wheel. Charles H. Metz, Highlandville, Mass.

A bicycle-wheel having a felly formed of two hoop-shaped tubes connected by braces, a tire resting on said braces between said tubes, lacing-cords for attaching said tire to the tubes, a hub, and spokes connecting the hub ends with opposite felly rims, said spokes being arranged in sets or groups at the hub and at regular or nearly regular intervals at the fellys, so that said spokes are approximately tangent to the hub.

No. 21,346.—Fire-Hose. F. Reddaway & Co., Manchester, England, and New York.

The combination of a central stripe of red with a stripe of blue of equal width lying adjacent to and on each side thereof and parallel therewith running throughout the length of the fabric.

Making Rubber Tubes with the Thumb Nail.

THE vent on a beer-faucet is an indispensable adjunct to its usefulness, and the method in which it is made is interesting, if not entirely novel. The vent, which is about nine inches in length, is made of rubber, which comes in sheets in a raw state, and is put together in plies—four at the thick end and one at the thin end. After the plying has been done it is cut in strips $\frac{3}{4}$ -inch wide, and turned over to a boy for completion. And here is where the utility of a good thumb nail assumes one aspect of commercial value undreamed of by the masses, and more particularly that dainty and superesthetic contingent to whom the sight of a well-developed and altogether inoffensive thumb nail would be an object of lofty contempt. The strip of raw rubber demands careful handling at this stage of its transformation, the slightest particle of matter of a foreign nature on the edges to be joined being sufficient to unfit it for its purpose. The boy turns the strip around an iron core properly set, and with his thumb nail places the strip edge to edge until they cohere, keeping this up until the full length is similarly treated. After this the tube of rubber—for such it has now become—is placed on a large wire, and bulged at the end that is buried in the amber fluid, giving it the appearance of an air-tight valve at that point. It is next vulcanized and is then finished and ready for use. The critical period of its formation is in the thumb-nail treatment, the failure to connect the edges because of a broken or unevenly trimmed thumb nail being productive of air-holes, which make the rubber a total loss.—*The Age of Steel.*

THE storm slipper seems to have been an inspiration. Wet dresses are as annoying to the tops and heels of shoes as the damp pavement, and the protection with so little weight in the over-shoe is a great desideratum.

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